

SUPERSEDED BY 39E-1SI 3-74

Draw-Thru Central Station Weathermaker®

SUPERSEDED BY 39B-2SI 6/74

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PREINSTALLATION

1. Use spacer bars when rigging to avoid bending unit flanges per Fig. 1.
2. Check items received against packing list and Tables 1, 2, and 3. Notify Carrier at once of any discrepancy.
3. Examine for damage incurred during shipment. Especially check for bent fan wheel or shaft which may result in future vibration problems. If any damage is found, immediately file claim with transit company.
4. Check fan wheel setscrews (sizes 040-060) or fan wheel clamps (sizes 070-140) for secureness. Refer to Table 4 or Fig. 2 respectively.
 - a. Bolt threads with a dark-green finish require no lubrication. Carefully lubricate all other bolt threads with oil. *Do not oil fan shaft.*
 - b. Tighten clamps evenly.
5. Exercise care in handling all equipment.
6. If unit is to be stored for more than two weeks prior to installation, observe the following precautions:
 - a. Choose storage site that is level and sturdy, to prevent undue stress or permanent distortion to fan. *Do not subject bearings to direct sunlight or temperatures in excess of 180 F.*

- b. Protect bearings and rotating components against moisture, abrasives and corrosion.
- c. Cover entire unit with a tarp or plastic coverall. Extend cover under unit if stored on ground. Moisture and condensation can cause loosening of internal insulation.
- d. Periodically rotate fan shaft slowly by hand.

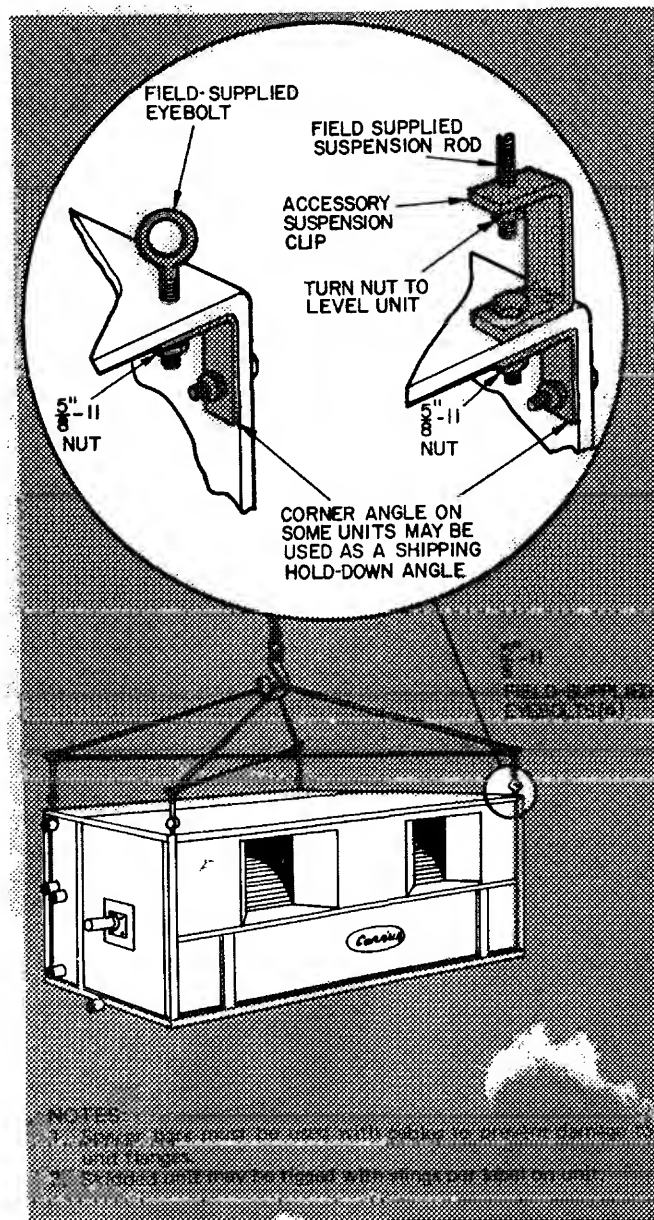


Fig. 1 – Rigging and Suspension Details

Table 1 — 39B Type "A" Unit Arrangements (Horizontal With Reheat)
Base unit and accessories on 39BA, sizes 040 thru 060 are shipped completely assembled.

ARRANGEMENT	ASSEMBLED UNIT	SHIPPED			
A-10					
Used on 39B	070-140	070	080-110	120-140	
A-11					Not Available
Used on 39B	070-120	070	080-110	120	130-140
A-12					
Used on 39B	070-140	070	080-110	120, 130	135, 140
A-13					
Used on 39B	070-140	070	080-110	120-140	
A-14					Not Available
Used on 39B	070-120	070	080-110	120	130-140
A-15					
Used on 39B	070-140	070	080-110	120, 130	135, 140
A-16					
Used on 39B	070-140	070	080-110	120, 130	135, 140
A-17					Not Available
Used on 39B	070-120	070	080-110	120	130-140

Table 1 – 39B Type “A” Unit Arrangements (Horizontal With Reheat) (cont)

Base unit and accessories on 39BA, sizes 040 thru 060 are shipped completely assembled.

ARRANGEMENT	ASSEMBLED UNIT	SHIPPED			
A-18					
Used on 39B	070-140	070	080-110	120,130	135,140
A-19					
Used on 39B	070-140	070	080-110	120,130	135,140
A-20					Not Available
Used on 39B	070-120	070	080-110	120	130-140
A-21					
Used on 39B	070-140	070	080-110	120,130	135,140
A-22					
Used on 39B	070-140	070	080-110	120,130	135,140
A-23					
Used on 39B	070-140	070	080-110	120,130	135,140

LEGEND

BD – Bypass Duct
CC – Cooling Coil and Reheat
 Coil Section

F – Fan Section

FB – Face & Bypass Damper Section

HF – High-Velocity Filter Section

LF – Low-Velocity Filter Section

P – Base Pan

PD – Preheat Duct Extension

PH – Preheat Coil Section

PS – Plenum Section

Separate Crates or Skids

Location for Shipping only on one Skid.

NOTE: Combination mixing box and filter assembly (MB), not shown, is shipped separately.

Table 2 – 39B Type “B” Unit Arrangements (Horizontal Without Reheat)
 Base unit and accessories on 39BA, sizes 040 thru 060 are shipped completely assembled.

ARRANGEMENT	ASSEMBLED UNIT	SHIPPED		ARRANGEMENT	ASSEMBLED UNIT	SHIPPED	
B-10				B-17		Shipped Assembled	
Used on 39B	070-120			Used on 39B	070-120	070-110	120
B-11				B-18			
Used on 39B	070-120			Used on 39B	070-120	070-110	120
B-12		Shipped Assembled		B-19		Shipped Assembled	
Used on 39B	070-120	070-110	120	Used on 39B	070-120	070-110	120
B-13		Shipped Assembled		B-20			
Used on 39B	070-120	070-110	120	Used on 39B	070-120	070-110	120
B-14		Shipped Assembled		B-21			
Used on 39B	070-120	070-110	120	Used on 39B	070-120	070-110	120
B-15				B-22			
Used on 39B	070-120	070-110	120	Used on 39B	070-120	070-110	120
B-16		Shipped Assembled		B-23		Shipped Assembled	
Used on 39B	070-120	070-120		Used on 39B	070-120	070-110	120

LEGEND

BD – Bypass Duct
CC – Cooling Coil Section Only
F – Fan Section
FB – Face & Bypass Damper Section
HF – High-Velocity Filter Section

LF – Low-Velocity Filter Section
P – Base Pan
PD – Preheat Duct Extension
PH – Preheat Coil Section
PS – Plenum Section

Separate Crates or Skids

Location for Shipping only on one Skid

NOTE: Combination mixing box and filter assembly (MB), not shown, is shipped separately.

Table 3 – 39B Type "D" Unit Arrangements (Vertical)
 Base unit and accessories on 39BA, sizes 040 thru 060 are shipped completely assembled.

ARRANGEMENT	ASSEMBLED UNIT	SHIPPED			ARRANGEMENT	ASSEMBLED UNIT	SHIPPED		
D-10		Shipped Assembled			D-25		Shipped Assembled		
Used on 39B	070-140	070-110	120-140		Used on 39B	070-140	070-090	100-140	
D-11		Shipped Assembled		Not Available	D-26		Shipped Assembled		Not Available
Used on 39B	070-120	070-110	120	130-140	Used on 39B	070-120	070-090	100-120	130-140
D-12		Shipped Assembled			D-27		Shipped Assembled		
Used on 39B	070-130,140	070-110	120,130	135,140	Used on 39B	070-140	070-090	100-130	135,140
D-13		Shipped Assembled			D-28		Shipped Assembled		
Used on 39B	070-130,140	070-110	120,130	135,140	Used on 39B	070-140	070-090	100-130	135,140
D-14		Shipped Assembled		Not Available	D-29		Shipped Assembled		Not Available
Used on 39B	070-120	070-110	120	130-140	Used on 39B	070-090,120	070-090	120	130-140
D-15		Shipped Assembled			D-31		Shipped Assembled		
Used on 39B	070-130,140	070-090	100-130	135,140	Used on 39B	070-140	070-090	100-130	135,140
D-17		Shipped Assembled		Not Available	D-34		Shipped Assembled		Not Available
Used on 39B	070-110,120	070-110	120	130-140	Used on 39B	070-120	070-090	100-120	130-140
D-18					D-35				
Used on 39B	070-140	070-110	120,130	135,140	Used on 39B	070-140	070-090	100-130	135,140

LEGEND

BH – Bypass Heat Section

CC – Cooling Coil Section

F – Fan Section

FB – Face & Bypass Damper Section

HF – High-Velocity Filter Section

LF – Low-Velocity Filter Section

P – Base Pan

PH – Preheat Coil Section

PS – Plenum Section

RH – Reheat Coil Section

Separate Crates or Skids

Location for Shipping only on one Skid

NOTE: Combination mixing box and filter assembly (MB), not shown, is shipped separately.

Table 4 — Setscrew Torques

SETSCREW SIZE	TORQUE
10	22.5- 30.5 in.-lb
1/4	52.7- 71.3 in.-lb
5/16	103.7-140.3 in.-lb
3/8	168.3-227.7 in.-lb
7/16	22.1- 29.9 ft.-lb
1/2	32.3- 43.7 ft.-lb
5/8	78.2-105.8 ft.-lb
3/4	107.9-146.1 ft.-lb

INSTALLATION

General

DO NOT

1. Remove protective caps from coil piping connections until ready to connect piping.
2. Bend or mutilate coil fins.
3. Remove protective cover or grease from fan shaft until ready to install sheave.
4. Lift by fan shaft extension or coil connections.
5. Remove fan drive from boxes until ready to install, to prevent loss of parts and installation information labeled on boxes.
6. Lift face and bypass damper assembly without providing support under center of assembly.

DO

1. Use spacer bars per Fig. 1 when rigging to avoid bending unit flanges.
2. Make piping and duct connections in accordance with standard practices. Refer to Carrier System Design Manual for details.
3. Leave sufficient clearances for:
 - a. Condensate trap.
 - b. Removal of fan shaft and coils.
 - c. Service of filters, fan motor, bearings, damper linkage, and damper motors (at least 30 inches).
 - d. Piping to permit removal of fan guard.

Base Unit Assembly (Fan and Coil Sections)

NOTES:

1. Base unit and accessories on 39BA sizes 040 thru 060 (arrangements A, B, and D) are shipped completely assembled, except for accessory mixing box which is shipped separately.
2. More holes may exist than indicated by these instructions. Use only those which line up.
3. Fastener package is shipped with each fan section. Sealing compound is shipped inside belt guard.
4. Remove any accessories attached to base unit that are not in their final location per Tables 1, 2, and 3.
5. Unit suspension is simplified by completely assembling units prior to rigging.
6. Unit sizes 130 thru 140 must be assembled on a platform for suspended applications.

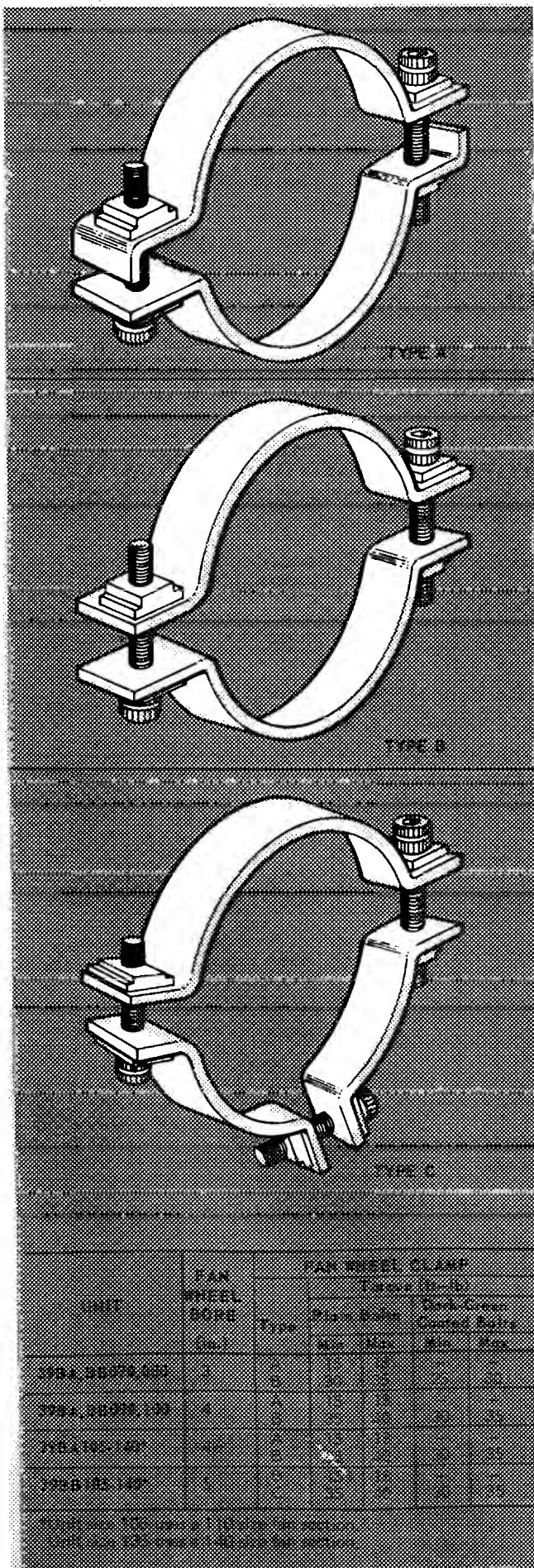


Fig. 2 — Fan Wheel Clamp (Size 070-140)

UNITS 39BA,BB SIZES 070 THRU 120 (Arrangement A) – Refer to Fig. 3 and Table 1.

1. Remove shipping skid(s) and apply sealing compound to flanges on air intake side of fan section.
2. Face air intake side of fan section toward air discharge side of cooling coil section.
3. Fasten flange 1 to 2 with five 3/8-16 x 3/4-in. hex head cap screws, lockwashers and flange 2 weld nuts.
4. Fasten flanges 3 to 4 with one 3/8-16 x 3/4-in. hex head cap screw, lockwasher, and hex nut per two flanges.
5. Fasten corners 5 to 6 with one 3/8-16 x 3/4-in. hex head cap screw, lockwasher, two plain washers and hex nut per two corners. Corner holes are 11/16-in. diameter.
6. Fasten external flange 7 to 8 with three 3/8-16 x 3/4-in. hex head cap screws, lockwashers, and flange 8 weld nuts.

7. Tighten all screws securely.

UNITS 39BA,BB SIZES 130 THRU 140 AND 39BC SIZES 135 AND 140 (Arrangement A) – Refer to Fig. 3 and Table 1.

1. Follow preceding steps 1 and 2.
2. Remove fan section panels A and B. Provide a cardboard walkway on fan section bottom to protect insulation.
3. Fasten flange 1 to 2 with seven 3/8-16 x 3/4-in. hex head cap screws, lockwashers, and flange 2 weld nuts.
4. Fasten flanges 3 to 4 with five 3/8-16 x 3/4-in. hex head cap screws, lockwashers, plain washers, and hex nuts per two flanges.
5. Fasten riser panel 9 to lip 10 with six 1/4-20 x 1/2-in. self-tapping screws and lip 10 engagement holes.
6. Tighten all screws securely.
7. Remove cardboard walkway from fan section and replace panels A and B.

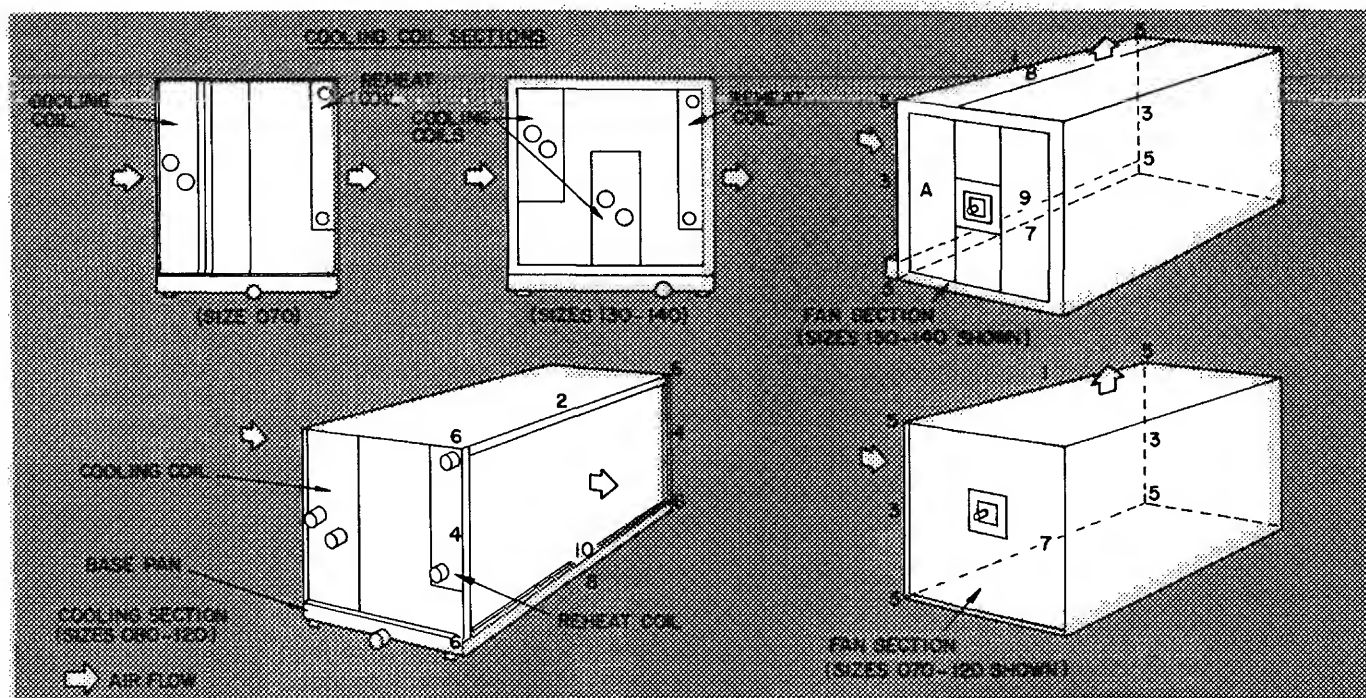


Fig. 3 – Base Unit Assembly for 39BA,BB070-140 and 39BC135 and 140 (Arrangement A)

UNITS 39BA,BB SIZES 100 THRU 120 (Arrangement D, except D-17 and D-18) – Refer to Fig. 4 and Table 3.

1. Remove shipping skids and apply sealing compound to flanges on air discharge side of cooling coil section.
2. Place air intake side of fan section on top of air discharge side of cooling coil section, reheat coil section or bypass heat section.
3. Fasten flange 1 to 2 with three 3/8-16 x 3/4-in. hex head cap screws, lockwashers per two flanges and flange 2 weld nuts.
4. Fasten flanges 3 to 4 with one 3/8-16 x 3/4-in. hex head cap screw, lockwasher, and hex nut per two flanges.
5. Fasten corners 5 to 6 with one 3/8-16 x 3/4-in. hex head cap screw, lockwasher, two plain washers, and hex nut per two corners. Corner holes are 11/16-in. diameter.
6. Tighten all screws securely.

Arrangements D-17 and D-18

1. Follow preceding steps 1 thru 5.
2. Fasten spray humidifier or preheat coil section with bypass when supplied to cooling coil section per accessory assembly.
3. Fasten flange 7 to fan section side A with three 1/4-20 x 1/2-in. self-tapping screws and side A engagement holes.
4. Line up flanges 8 and 9 and drill two engagement holes in each flange 9 with a no. 3 drill.
5. Fasten flanges 8 to 9 with two 1/4-20 x 1/2-in. self-tapping screws per two flanges.
6. Tighten all screws securely.

UNITS 39BA,BB SIZES 130 THRU 140 AND 39BC SIZES 135 AND 140 (Arrangement D, except D-18) – Refer to Fig. 5 and Table 3.

NOTE: On arrangements D-31 and 35, sizes 135 and 140 – first fasten bypass heat section to cooling coil section per Accessory Assembly, then proceed with following steps:

1. Remove shipping skid(s) and apply sealing compound to flanges on air discharge side of cooling coil section.
2. Place air intake side of fan section on top of air discharge side of cooling coil section, reheat coil section, or bypass heat section.
3. Cooling coil section –
 - a. Line up side A of fan section with filler panel and drill eight engagement holes along bottom edge of side A with a no. 3 drill.
 - b. Fasten filler panel to side A with eight 1/4-20 x 1/2-in. self-tapping screws.
4. Bypass heat section or reheat coil section.
 - a. Place filler panel, removed from cooling coil section per Accessory Assembly, along flange 7 of accessory section and butt against fan section per Fig. 5.
 - b. Drill seven engagement holes along flange 7 with a no. 2 drill.
 - c. Fasten filler panel to flange 7 with seven self-tapping screws.
 - d. Follow preceding steps 3a and 3b.
5. Fasten flange 1 to 2 with five 3/8-16 x 3/4-in. hex head cap screws, lockwashers, plain washers, and hex nuts per two flanges.
6. Tighten all screws securely.

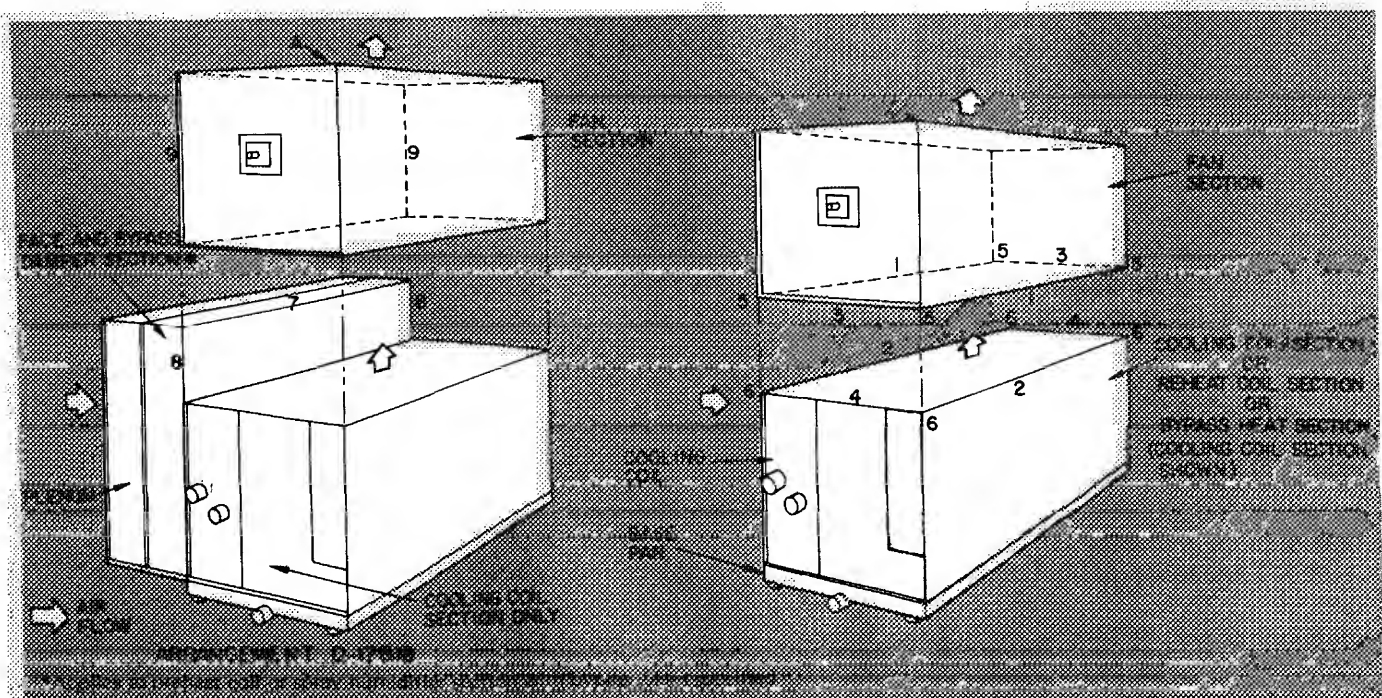


Fig. 4 – Base Unit Assembly for 39BA,BB100-120 (Arrangement D)

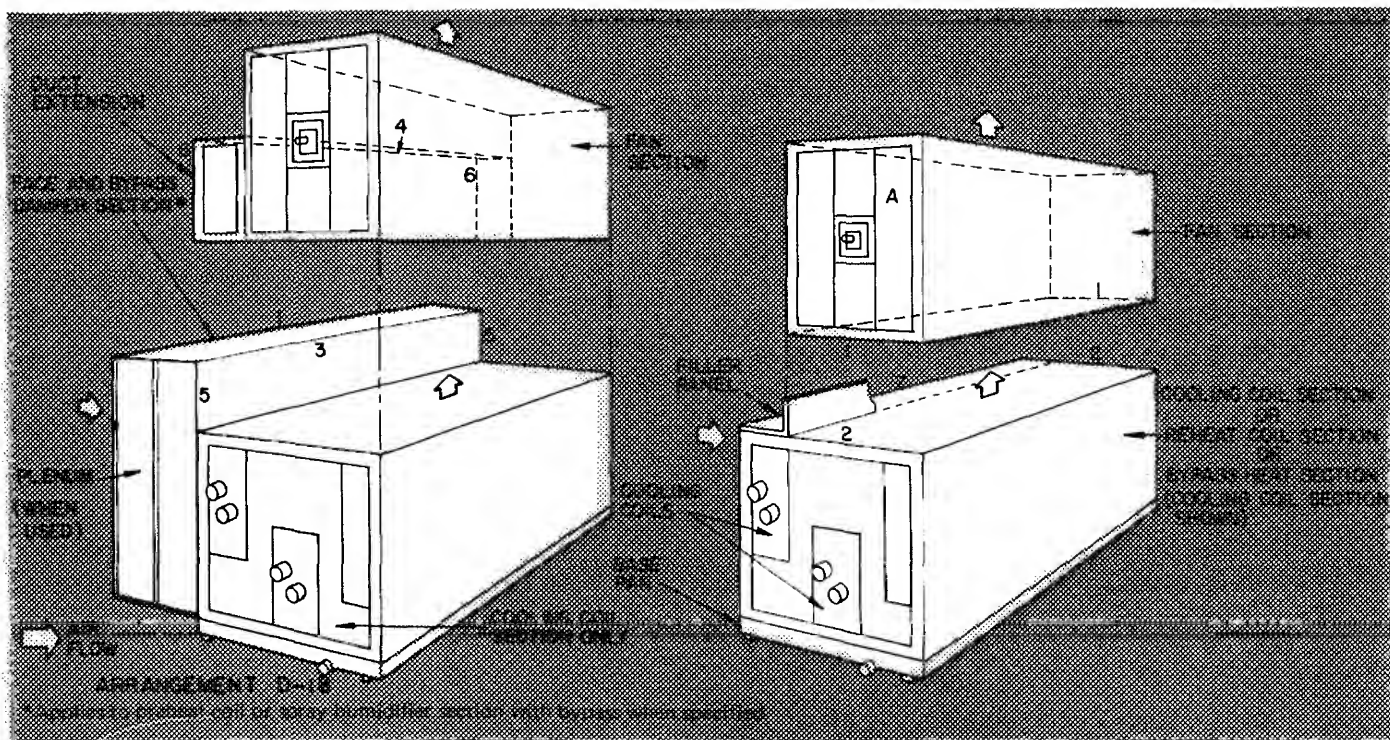


Fig. 5 – Base Unit Assembly for 39BA, BB130-140 and 39BC135, 140 (Arrangement D)

Arrangement D-18

NOTE: Duct extension is shipped assembled to fan section.

1. Remove filler panel from cooling coil section and discard.
2. Fasten spray humidifier or preheat coil section with bypass when specified or plenum and face and bypass damper section to cooling coil section per Accessory Assembly.
3. Remove shipping skid and apply sealing compound to flanges on air discharge side of cooling coil section.
4. Place air intake side of fan section on top of air discharge side of cooling coil section.
5. Fasten flanges 3 to 4 with seven 1/4-20 x 1/2-in. self-tapping screws and flange 4 engagement holes.
6. Fasten flanges 5 to 6 with two 3/8-16 x 3/4-in. hex head cap screws, lockwashers, plain washers, and hex nuts per two flanges.
7. Tighten all screws securely.

Accessory Assembly – Refer to Tables 1, 2, and 3.

NOTE: More holes may exist than indicated. Use only those which line up.

BYPASS HEAT SECTION (Arrangements D-31 and D-35; sizes 135 and 140 only) – Refer to Fig. 6.

1. Remove shipping crate and apply sealing compound to flanges on air intake side of accessory.
2. Remove filler panel from cooling coil section and save for fan section assembly.
3. Place air intake side of accessory on top of air discharge side of cooling coil section.
4. Fasten flanges 1 to matching flanges of cooling coil section with five 3/8-16 x 3/4-in. hex head

cap screws, lockwashers, plain washers, and hex nuts per two flanges.

5. Tighten all screws securely.

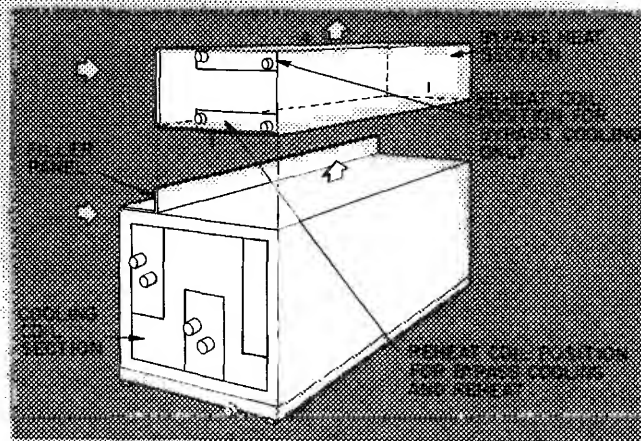


Fig. 6 – Assembly of Accessory Bypass Heat Section (Arrangements D-31, D-35; Sizes 135, 140 Only)

BYPASS DUCT (Arrangement A only) – Refer to Fig. 7.

1. Sizes 080 thru 110 –
 - a. Place one endpiece on each flange 8 of cooling coil section, with fiber glass insulated sides facing each other. Ensure air intake side of bypass duct is flush with edge of flange 9.
 - b. Fasten flange 1 to 8 with three 1/4-20 x 1/2-in. self-tapping screws and both flange 8 engagement holes.
 - c. Fasten tabs 7 to flanges 8 with a 3/8-16 x 3/4-in. hex head cap screw, two plain washers, and hex nut per tab.

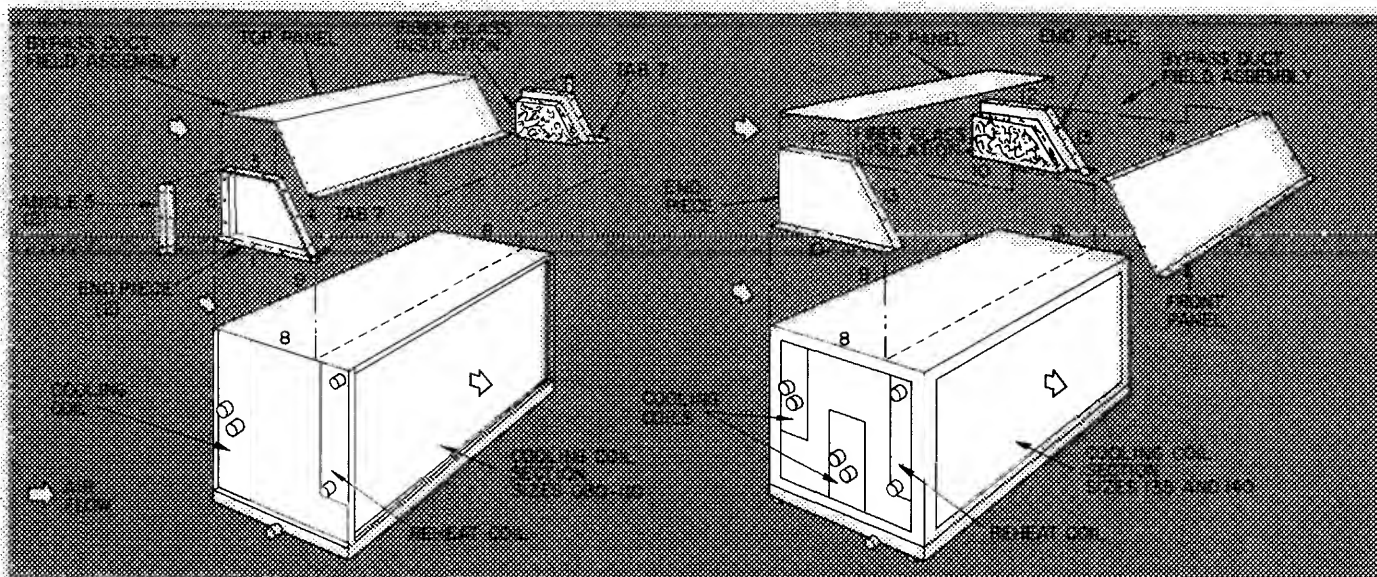


Fig. 7 – Assembly of Accessory Bypass Duct – (Arrangement A Only)

- d. Fasten flange 2 to matching surface of cooling coil section with seven 1/4-20 x 1/2-in. self-tapping screws and matching surface engagement holes.
 - e. Fasten top panel to each flange 3 and 4 with two and three 1/4-20 x 1/2-in. self-tapping screws respectively per end and each flange 3 and 4 engagement holes.
 - f. Fasten one angle 5 to each flange 6 with three 1/4-20 x 1/2-in. self-tapping screws and flange 6 engagement holes.
 - g. Tighten all screws securely.
2. Sizes 135 and 140 –
- a. Place one endpiece on one flange 8 of cooling coil section with fiber glass insulated side facing second flange 8.
 - b. Fasten flange 10 to 8 as follows:
 - (1) Line up flange 10 and 8. Ensure air intake side of bypass duct is flush with edge of flange 9
 - (2) Drill six engagement holes in flange 8 with a no. 3 drill.
 - (3) Fasten flange 10 to 8 with six 1/4-20 x 1/2-in. self-tapping screws.
 - c. Loosely fasten one end of top panel to flange 12 with nine 1/4-20 x 1/2-in. self-tapping screws and flange 12 engagement holes.
 - d. Place second endpiece on second flange 8 of cooling coil section with fiber glass insulated side facing first endpiece.
 - e. Loosely fasten remaining end of top panel with nine 1/4-20 x 1/2-in. self-tapping screws and flange 12 engagement holes.
 - f. Loosely fasten front panel to flanges 13 with five 1/4-20 x 1/2-in. self-tapping screws per end and flange 13 engagement holes.
 - g. Loosely fasten flange 14 to matching edge of top panel with seven 1/4-20 x 1/2-in. self-tapping screws and engagement holes along top panel edge.
 - h. Fasten flange 10 of second endpiece as follows:
 - (1) Line up flange 10 and 8. Ensure air intake side of bypass duct is flush with edge of flange 9.
 - (2) Drill six engagement holes in flange 8 with a no. 3 drill.
 - (3) Fasten flange 10 to 8 with six 1/4-20 x 1/2-in. self-tapping screws.
 - i. Fasten flange 11 to matching surface of cooling coil section as follows:
 - (1) Line up flange 11 and matching surface.
 - (2) Drill ten engagement holes in matching surface with a no. 2 drill.
 - (3) Fasten flange 11 to matching surface with ten 1/4-20 x 1/2-in. self-tapping screws.
 - j. Tighten all screws securely.
- FACE AND BYPASS DAMPER SECTION; PRE-HEAT COIL SECTION AND/OR SPRAY HUMIDIFIER SECTION WITH AND WITHOUT BYPASS (Sizes 070 thru 120) – Refer to Fig. 8.**
1. Remove shipping crate(s) and apply sealing tape to flanges on air discharge side of spray humidifier section only.
 2. Face air discharge side of accessory(ies) toward air intake side of cooling coil section.
- NOTE:** Spray humidifier section must be adjacent to cooling coil section so excess water can be collected in condensate pan. Remove factory-installed accessories to do this and replace same.

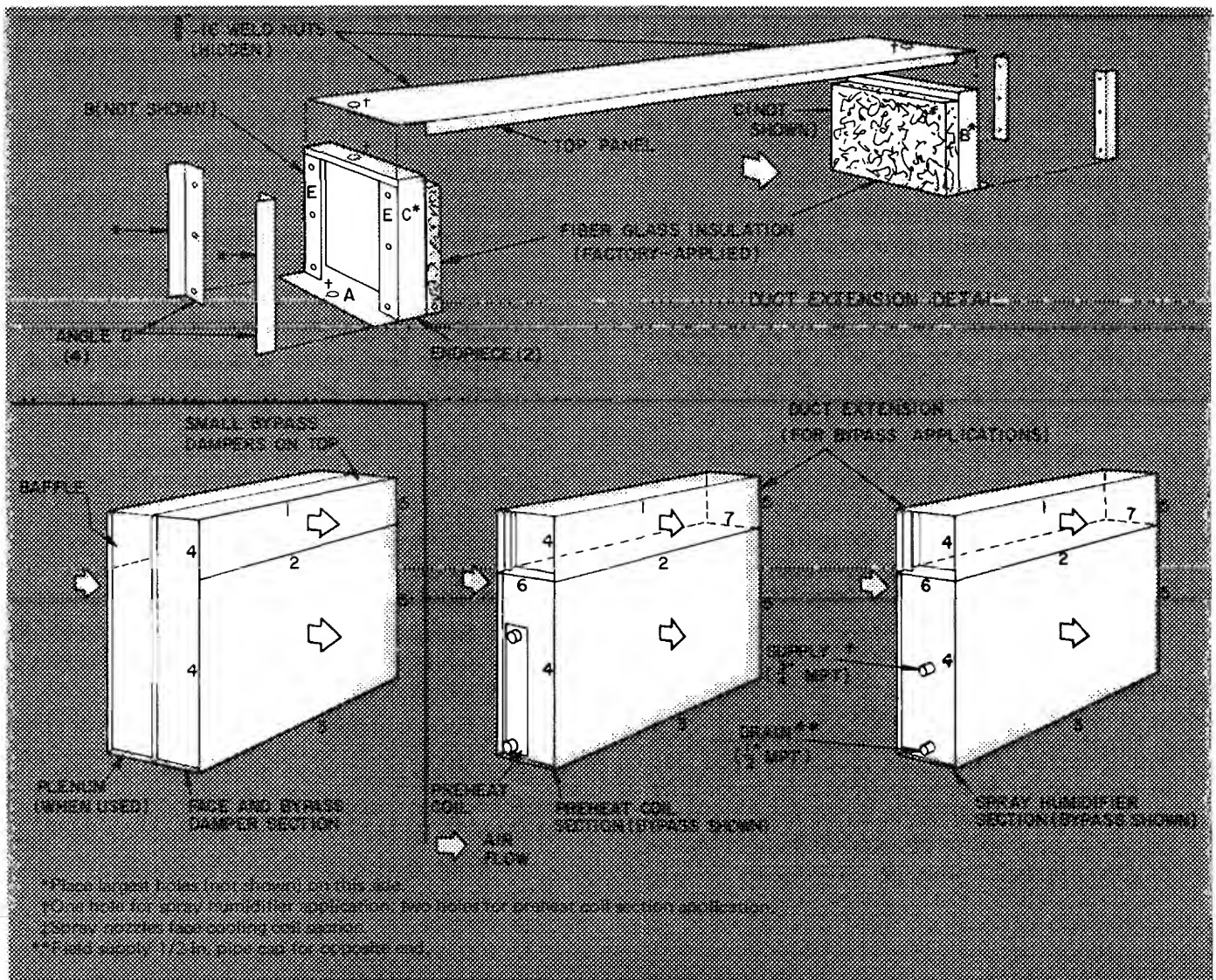


Fig. 8 — Assembly of Accessory Face and Bypass Damper Section; Preheat Coil Section and/or Spray Humidifier Section with and without Bypass — (Sizes 070-120)

3. Fasten flanges 2 thru 5 of preheat coil or spray humidifier section without bypass to matching flanges of cooling coil section with the following:
 - a. Fasten flanges 2 and 3 with three 3/8-16 x 3/4-in. hex head cap screws per two flanges and matching flange weld nuts.
 - b. Fasten flanges 4 and 5 with three 3/8-16 x 3/4-in. hex head cap screws and hex nuts per two flanges.
4. Duct extension (for accessories with bypass) —
 - a. Preheat coil section only — Remove two (size 070) or three (sizes 080 thru 120) 1/4-20 x 1-in. hex head cap screws, plain washers, and hex nuts from each flange 6 and 7. Save fasteners for following steps b and c.
 - b. Place endpiece having largest holes on side C, on flange 6 of accessory. Face fiber glass insulated side toward flange 7 of accessory. Fasten surface A to flange 6 of spray humidifier section with one 1/4-20 x 1/2-in. self-tapping screw and flange 6 engagement hole. For preheat coil section, use two of each type of fastener saved from preceding step a.
 - c. Place second endpiece on flange 7 of accessory. Face fiber glass insulated side toward fiber glass insulated side of first endpiece. Fasten surface A to flange 7 per preceding step b.
 - d. Fasten one angle D to each side E of both endpieces with two (size 070) or three (sizes 080 thru 120) 1/4-20 x 1/2-in. self-tapping screws per angle and side E engagement holes.
 - e. Fasten top panel to top of each endpiece with one (spray humidifier section) or two (preheat coil section) 1/4-20 x 1/2-in. self-tapping screw(s) per end and engagement hole(s) in top of each endpiece.

5. Fasten flanges 1 thru 5 of face and bypass damper section; preheat coil or spray humidifier section with bypass as follows:
 - a. Arrangements A and B – Fasten flange 1 to matching flange of applicable accessory with three fasteners per preceding step 3a.
 - b. Arrangement D – Fasten flange 1 to matching flange of fan section or accessory bypass heat section with three 1/4-20 x 1/2-in. self-tapping screws and matching flange engagement holes. Fasten flange 1 to matching flange of duct extension with three fasteners per preceding step 3a.
 - c. Fasten flanges 2 and 3 to matching flanges of applicable accessory or cooling coil section with three fasteners per preceding step 3a.
 - d. Fasten flanges 4 and 5 to matching flanges of applicable accessory(ies) and/or cooling coil section with four (size 070) or five (sizes 080 thru 120) fasteners per preceding step 3b.
6. Tighten screws securely.
7. When face and bypass damper section is used with accessory humidifier, minimum stops may be required to ensure air flow thru humidifier at all times. Install stops on damper actuator linkage as opposed to directly on damper blades to prevent possible damage.

PREHEAT COIL SECTION, AND/OR SPRAY HUMIDIFIER SECTION WITH AND WITHOUT BYPASS (Sizes 130 thru 140) – Refer to Fig. 9.

1. Remove shipping crate and apply sealing tape to flanges on air discharge side of spray humidifier section only.
 2. Remove coil from preheat section to provide access to internal flanges 5, 6, and 8.
 3. Face air discharge side of accessory(ies) toward air intake side of cooling coil section.
- NOTE:** Spray humidifier section must be adjacent to cooling coil section so excess water can be collected in condensate pan. Remove factory-installed accessories to do this and replace same.
4. Duct extension (for accessories with bypass) –
 - a. Place one endpiece on each flange 3 of accessory, with flanges 1 facing each other.
 - b. Line up flanges 2 and 3. Drill one (spray humidifier section) or two (preheat coil section) engagement holes in flanges 3 with a no. 3 drill.
 - c. Fasten flanges 2 to 3 with one or two 1/4-20 x 1/2-in. self-tapping screws per two flanges.
 - d. Fasten top panel to each flange 1 with two 1/4-20 x 1/2-in. self-tapping screws per end and both flange 1 engagement holes.

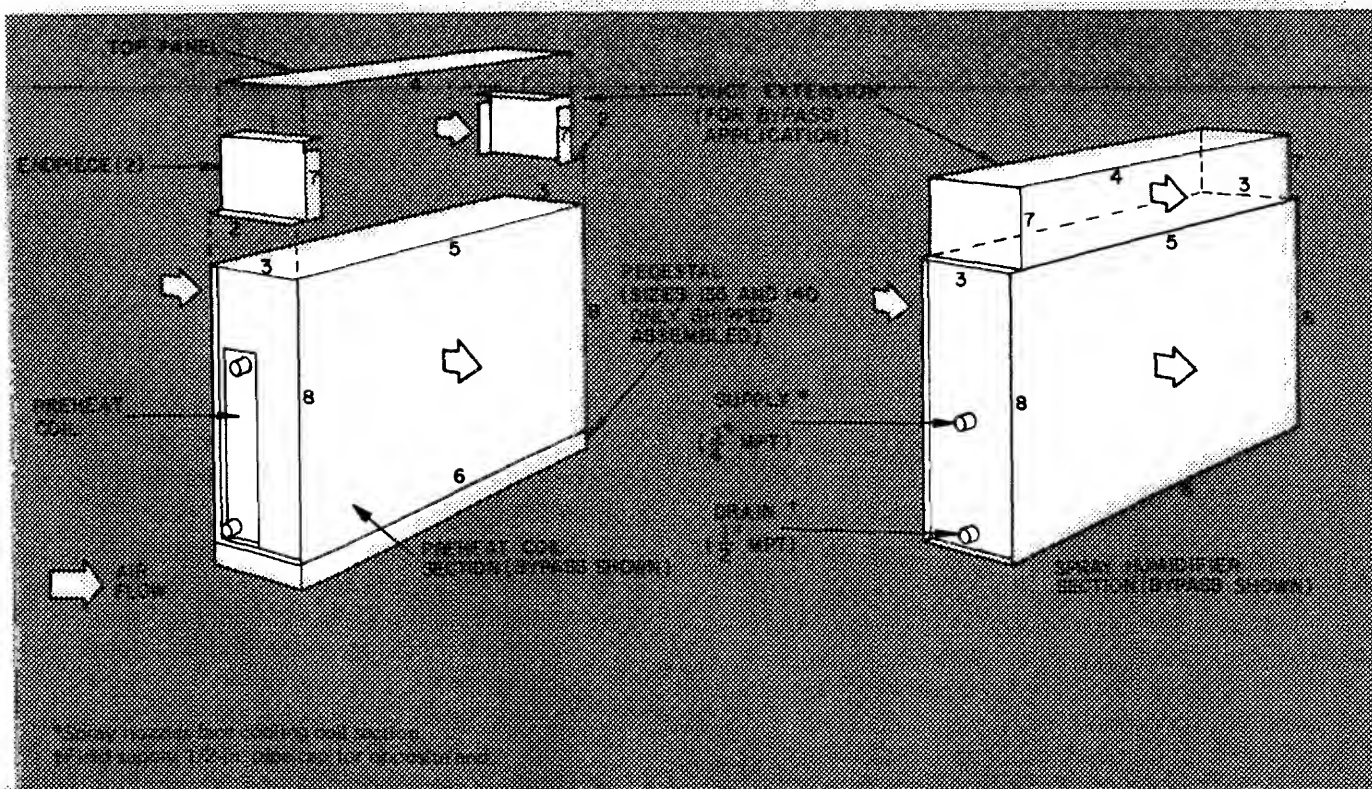


Fig. 9 – Assembly of Accessory Preheat Coil Section and/or Spray Humidifier Section with and without Bypass (Sizes 130-140)

5. Fasten flange 4 to matching flange of applicable accessory (except bypass heat section arranged for bypass cooling only) with seven 1/4-20 x 1/2-in. self-tapping screws and locknuts.
 6. Fasten flange 4 to matching flange of bypass heat section arranged for bypass cooling only as follows:
 - a. Line up flange 4 with matching flange of accessory.
 - b. Drill seven engagement holes in matching flange with a no. 3 drill.
 - c. Fasten flange 4 to matching flange with seven 1/4-20 x 1/2-in. self-tapping screws.
 7. Fasten flange 5 to matching flange of applicable accessory or cooling coil section with seven 3/8-16 x 3/4-in. hex head cap screws and matching flange weld nuts.
 8. Fasten flange 6 to matching flange of applicable accessory with seven 3/8-16 x 3/4-in. hex head cap screws and matching flange weld nuts.
 9. Fasten flange 6 to matching flange of cooling coil section with seven 1/4-20 x 1/2-in. self-tapping screws and matching flange engagement holes.
 10. Fasten flanges 7 to matching flanges of applicable accessory with two 1/4-20 x 1/2-in. self-tapping screws per two flanges and matching flange engagement holes (bypass duct) or locknuts (duct extension or bypass heat section).
 11. Fasten flanges 8 to matching flanges of applicable accessory or cooling coil section with five 3/8-16 x 3/4-in. hex head cap screws and hex nuts per two flanges.
 12. Tighten all screws securely.
 13. Replace coil in preheat section.
- FACE AND BYPASS DAMPER SECTION**
(Size 130 thru 140) – Refer to Fig. 10.
1. Follow preceding steps 1 and 3.
 2. Fasten flange 1 to matching flange of applicable accessory (except bypass heat section arranged for bypass cooling only) with seven 1/4-20 x 1/2-in. self-tapping screws and locknuts.
 3. Fasten flange 1 to matching flange of bypass heat section arranged for bypass cooling only as follows:
 - a. Line up flange 1 with matching flange of accessory bypass heat section.
 - b. Drill seven engagement holes in matching flange with a no. 3 drill.
 - c. Fasten flange 1 to matching flange with seven 1/4-20 x 1/2-in. self-tapping screws.
 4. Fasten flange 2 to matching flange of applicable accessory or cooling coil section (preheat coil section; sizes 135 and 140 excluded) with seven 3/8-16 x 1-in. hex head cap screws per flange and matching flange weld nuts.
 5. Fasten flange 2 to matching flange of preheat coil section (sizes 135 and 140) as follows:
 - a. Line up flange 2 with matching flange of preheat coil section.
 - b. Follow preceding steps 3b and 3c (substitute flange 2 for flange 1 in step 3c).
 6. Fasten flange 3 to matching flange of applicable accessory or cooling coil section (preheat coil and cooling coil sections, sizes 135 and 140 excluded) with seven 3/8-16 x 1-in. hex head cap screws and matching flange weld nuts.
 7. Fasten flange 3 to matching flange of preheat coil section (sizes 135 and 140) with seven 3/8-16 x 1-in. hex head cap screws and hex nuts.
 8. Fasten flange 3 to matching flange of cooling coil section (sizes 135 and 140) with seven 1/4-20 x 1/2-in. self-tapping screws and matching flange engagement holes.
 9. Fasten flanges 4 to matching flanges of applicable accessory (bypass duct excluded) with two 1/4-20 x 1/2-in. self-tapping screws and locknuts per flange.
 10. Fasten flange 4 to matching flanges of accessory bypass duct with two 1/4-20 x 1/2-in. self-tapping screws and matching flange engagement holes.
 11. Fasten flanges 5 to matching flanges of applicable accessory or cooling coil section with:

five (accessory or cooling coil section – size 130); five (accessory section – sizes 135 and 140); six (cooling coil section – sizes 135 and 140) 3/8-16 x 1-in. hex head cap screws and hex nuts per two flanges.
 12. Tighten all screws securely.
 13. When face and bypass damper section is used with accessory humidifier, minimum stops may be required to ensure air flow thru humidifier at all times. Install stops on damper actuator linkage as opposed to directly on damper blades to prevent possible damage.

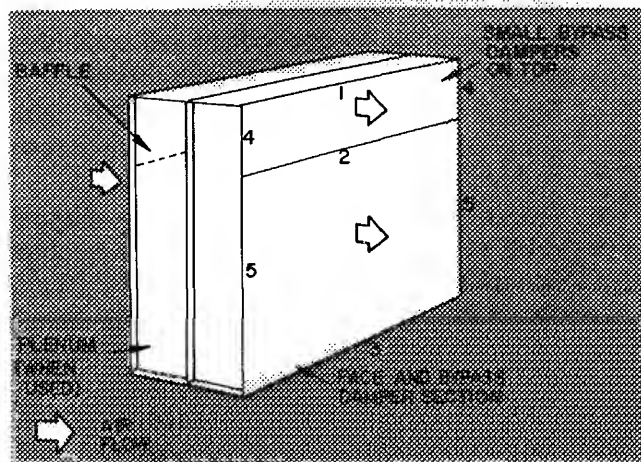


Fig. 10 – Assembly of Accessory Face and Bypass Damper Section – (Sizes 130-140)

FILTER SECTION OR COMBINATION MIXING BOX AND FILTER SECTION (All sizes and arrangements, high and low velocity) — Refer to Fig. 11.

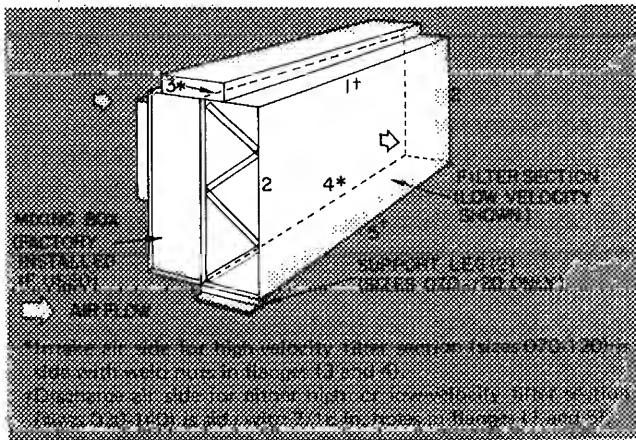


Fig. 11 — Assembly of Accessory Filter Section or Combination Mixing Box and Filter Section — (All Sizes and Arrangements — High- and Low-Velocity)

1. Remove shipping skid.
2. Face air discharge side of accessory toward air intake side of applicable accessory or cooling coil section.
3. Fasten support legs to low-velocity filter section or filter section of combination mixing box and filter section (sizes 070 thru 120 only) with two hex head cap screws, plain washers and nuts per leg.
4. Fasten flange 1 to matching flange of applicable accessory or cooling coil section with three (sizes 070 thru 120) or seven (sizes 130 thru 140 — preheat coil section sizes 135 and 140 excluded) 3/8-16 x 3/4-in. hex head cap screws and matching flange weld nuts.
5. Fasten flange 1 to matching flange of preheat coil section (sizes 135 and 140) per preceding steps 5a, 3b, and 3c (substitute flange 1 for flange 2 in step 5a).
6. Fasten flange 5 to matching flange of applicable accessory or cooling coil section as follows:
 - a. Fasten flange 5 (sizes 070 thru 120) with three 3/8-16 x 3/4-in. hex head cap screws and matching flange weld nuts.
 - b. Fasten flange 5 to matching flange of applicable accessory or cooling coil section (preheat coil and cooling coil sections, sizes 135 and 140 excluded) with seven 3/8-16 x 1-in. hex head cap screws and matching flange weld nuts.
 - c. Fasten flange 5 to matching flange of preheat coil section (sizes 135 and 140) with seven 3/8-16 x 1-in. hex head cap screws and hex nuts.

- d. Fasten flange 5 to matching flange of cooling coil section (sizes 135 and 140) with seven 1/4-20 x 1/2-in. self-tapping screws and matching flange engagement holes.
7. Fasten flanges 2 to matching flanges of applicable accessory or cooling coil section with:
 - three (accessory or cooling coil section — sizes 070 thru 120); five (accessory or cooling coil section — size 130); five (accessory section — sizes 135 and 140); or six (cooling coil section — sizes 135 and 140) 3/8-16 x 1-in. hex head cap screws and hex nuts per two flanges.
8. Tighten all screws securely.
9. Install filter blankoff panels, evenly spaced in filter tracks, when using high-velocity filters in low-velocity filter sections or combination mixing box and filter section to ensure uniform air distribution.

ATOMIZING SPRAY AND STEAM GRID HUMIDIFIERS — Normally shipped assembled in unit. If a separate shipment is made, refer to Installation Instructions provided with humidifier.

Unit Suspension and Mounting

1. Level unit after mounting to insure proper coil and base pan drainage.
2. Rig and suspend base unit from same points per Fig. 1. Note that unit sizes 130 and 140 must be installed on a suspended platform.
3. Rig and suspend accessory combination mixing box and filter section as follows:
 - a. Directly fastened to base unit — Rig and suspend from two top corners on air-intake end of accessory. Use one suspension rod per corner.
 - b. Remote from base unit — Rig and suspend from four top corners of accessory. Use one suspension rod per corner.

VIBRATION ISOLATORS

1. Arrangement A (unit size 070 thru 140). A minimum of six isolators should be installed for proper support — one on each corner of coil section and one on each corner of air discharge side of fan section. Two additional isolators may be installed on air-intake side of fan section.
2. Arrangements B and D (unit sizes 070 thru 140) and all arrangements (unit sizes 040 thru 060) — Four isolators should be installed for proper support.
3. Two isolators are required under combination mixing box and filter section for floor mounting.
4. Vibration isolator hangers are required on combination mixing box and filter section for suspended applications per preceding steps 2a and 2b, under "Unit Suspension and Mounting."

OUTDOOR UNITS — Not recommended for standard units unless following precautions are taken into consideration. Consult your local Carrier representative for units specially factory equipped for outdoor use.

1. Externally insulate all accessories that are not factory insulated (combination mixing box and filter section, filter section, and face and bypass damper section).
2. If outside temperature will be below dew point of air in unit at any time during operating season, insulate complete unit externally to prevent internal condensation. Vapor seal and weatherproof insulation.
3. Install a crowned waterproof cover on top of unit to prevent water from collecting or leaking into unit per Fig. 12. A shed-type cover (Fig. 13) can be used as an alternate.

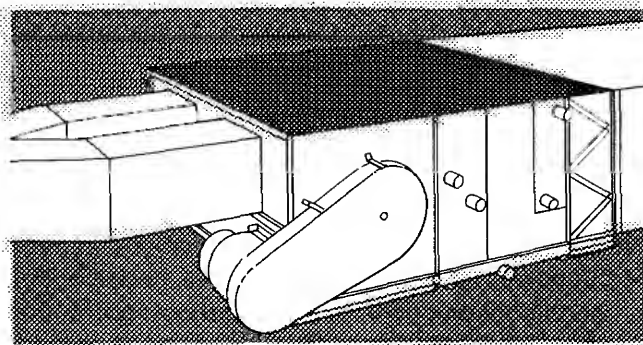


Fig. 12 — Crowned-Type Protection Cover — Field-Supplied

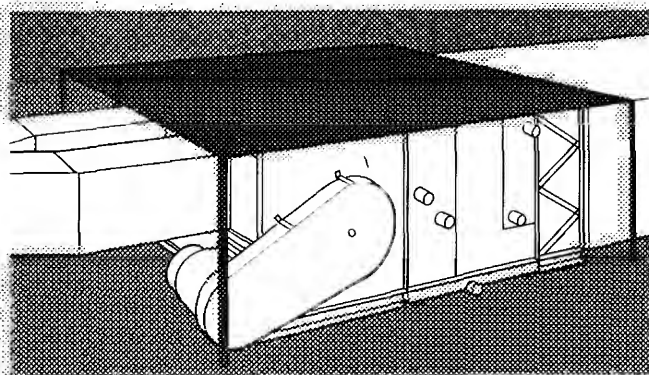


Fig. 13 — Shed-Type Protection Cover — Field-Supplied

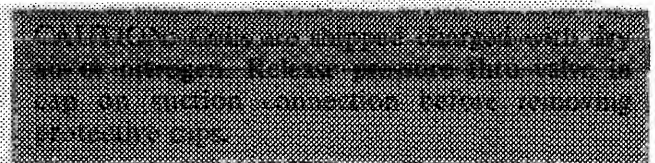
4. Caulk all joints with nonhardening material such as butyl-rubber or silicone-rubber to prevent moisture infiltration.
5. Install a field-supplied rain shield over outside air damper of combination mixing box and filter section.
6. Obtain motor manufacturer's recommendation for a fan motor type suitable for outdoor use.
7. Install a field-supplied cover over damper linkage to prevent ice and snow from interfering with operation. Damper motor must be suitable for outdoor use.
8. If unit is to be subjected to freezing temperatures, insulate condensate drain lines and locate trap indoors to prevent freeze-up.
9. For coil freeze-up protection, refer to 39B, 39C Operation and Maintenance Book.

Piping — Coil connections are labeled on unit.

GENERAL

1. Pipe unit so that vibration is not transmitted to or from unit.
2. Allow sufficient clearance for unit piping connections so that piping will not prevent removal of fan belt guard.
3. All piping must follow standard piping techniques. Refer to Carrier System Design Manual for details.

DIRECT-EXPANSION COOLING COIL



Refrigerant Distributor Nozzles

1. Check refrigerant distributor nozzle against design load and note following:
 - a. Nozzles installed are for minimum recommended coil loading for proper refrigerant distribution and oil return. For heavier loads, proper nozzles must be substituted.
 - b. Nozzle orifice size is stamped on nozzle. Refer to Table 5 for factory-installed standard coil nozzles. Refer to Table 6 for nozzle orifice capacities.

Table 5 — Factory-Installed Refrigerant Distributor Nozzles — Standard Direct-Expansion Coils

UNIT SIZE		040	050	060	070	080	090	100	105	110	120	130		135		140	
Size Coils In Unit		040	050	060	070	080	090	100	130	110	120	130	130	110	130	120	130
Qty-Size Nozzles In Coil	4- And 6-Row	1-G2	1-G3	1-G4	1-C4	1-C5	2-C5	2-C6	2-C5	2-C6	2-A10	2-C5	2-C5	2-C6	2-C5	2-A10	2-C5
	8-Row	1-G2	1-G3	1-G4	1-A10	1-A12	2-A12	2-A12	2-A12	2-A12	3-A12	2-A12	2-A12	2-A12	2-A12	3-A12	2-A12

Table 6 — Refrigerant Distributor Nozzle Orifice Capacities (Tons of Refrigeration)

NOZZLE ORIFICE NUMBER	EVAPORATOR TEMPERATURE								
	R-12			R-22			R-500		
	40 F	30 F	20 F	40 F	30 F	20 F	40 F	30 F	20 F
2	2.0	1.7	1.4	3.2	2.7	2.3	2.3	1.9	1.6
2-1/2	2.5	2.1	1.8	4.0	3.3	2.8	2.9	2.4	2.0
3	3.0	2.5	2.1	4.8	4.0	3.4	3.4	2.8	2.4
4	4.0	3.3	2.8	6.5	5.5	4.6	4.6	3.8	3.2
5	5.0	4.2	3.5	8.0	6.5	5.5	5.5	4.6	3.9
6	6.0	5.0	4.2	9.5	8.0	6.5	7.0	6.0	5.0
8	8.0	6.5	5.5	12.5	10.5	8.5	8.5	7.0	6.0
10	10.0	8.0	7.0	15.0	12.5	10.5	11.0	9.0	7.5
12	12.0	10.0	8.0	18.5	15.0	12.5	13.5	11.0	9.5
15	15.0	12.5	10.0	23.0	19.0	15.5	17.0	14.0	11.5
17	17.0	14.0	11.5	26.0	21.0	18.0	19.0	15.5	13.0
20	20.0	16.5	13.5	31.0	25.0	21.0	23.0	19.0	15.5
25	25.0	21.0	17.0	39.0	32.0	27.0	28.0	23.0	19.0
30	30.0	25.0	20.0	45.0	37.0	31.0	33.0	27.0	23.0
35	35.0	29.0	24.0	54.0	44.0	37.0	39.0	32.0	27.0
40	40.0	33.0	27.0	60.0	49.0	41.0	44.0	36.0	30.0

NOTES:

1. Orifice sizes 2-1/2, 3, 4, 5, 6 and 8 are not available for "A" nozzles
2. Nozzle designation is stamped on nozzle; "G" indicates 7/8 in. ODM distributor, "E" indicates 1-1/8 in. ODM distributor, "C" indicates 1-3/8 in. ODM distributor, "A" indicates 1-5/8 in. ODM distributor. Therefore, only the nozzles having the same letter are physically interchangeable.

- c. Standard coils above size 080 are face split with the load for each coil divided evenly between the two or three distributors. Unit sizes 130, 135 and 140 contain two coils, each of which are face split. The percentage of total unit load handled by each distributor is as follows:

- (1) Unit sizes 040 thru 080: 100%
- (2) Unit sizes 090 thru 120: 50% except 8-row coil on 120
- (3) Unit size 120 with 8-row coil: 33-1/3%
- (4) Unit size 130: 25%
- (5) Unit size 135: 23% for each distributor of the smaller coil and 27% for each distributor of the larger coil.
- (6) Unit size 140 with 4- and 6-row coil: 20% each distributor of smaller coil; 30% each distributor of larger coil.
- (7) Unit size 140 with 8-row coil: 20% each distributor of both coils.

2. Factory-installed nozzle should be replaced if the following relationship is not met:

$$\frac{\text{design load (per distributor)}}{\text{nozzle orifice capacity (Table 6)}} = 0.90 \text{ to } 1.20$$

3. If two nozzles satisfy above relationship, choose the smaller.
4. Mark final nozzle size, where indicated, on unit label for future reference. This will show nozzle size has been checked.

Partial Load Operation — System controls must be designed with consideration of following:

1. No coil or coil split served by a single refrigerant distributor and expansion valve can be expected to operate satisfactorily at less than 50% of design load.
2. As load reduces, a portion of coil surface must be deactivated so that remaining active coil or coil splits operate between 50 and 100% of design load.
3. Face-split coils may be used when air quantity is constant. In variable volume systems, row-split coils must be used.
4. If operation must be below 50% of design load, hot gas bypass must be used. Refer to Carrier System Design Manual for details.

Suction Piping

1. Connect suction piping per Fig. 14, 15 and 16.
2. Suction line from evaporator to end of 15 diameter long riser (located between reducer fittings) must be sized for high velocity. Refer to Carrier System Design Manual, Part 3 for suction pipe sizing charts. This piping length will normally result in an equivalent length of 20 ft and should be sized for a pressure loss corresponding to 0.5 F. Remaining suction line should be sized for a pressure drop corresponding to 1.5 F for a total suction line pressure drop corresponding to 2 F.
3. Suction risers must be sized to provide adequate oil return at minimum load. When a suction riser is designed to permit oil return at minimum load, the pressure drop at full load may be too great. If this situation occurs, a double suction riser should be used. Refer to Carrier System Design Manual for details of sizing.

Expansion Valve (field-supplied)

1. Expansion valve must satisfy following:
 - a. Design load per distributor.
 - b. Available pressure drop.
 - c. Valve inlet temperature (condensing temperature minus subcooling).
 - d. Design evaporator temperature.
 - e. Valve must have non-condensing charge power element.
 - f. If selection falls between two valves, choose smaller.
2. Install expansion valve(s). Refer to Fig. 14, 15 and 16 for proper location of sensing bulb and equalizer connection.
3. Install condensate pan(s) under expansion valve(s) per Fig. 17.

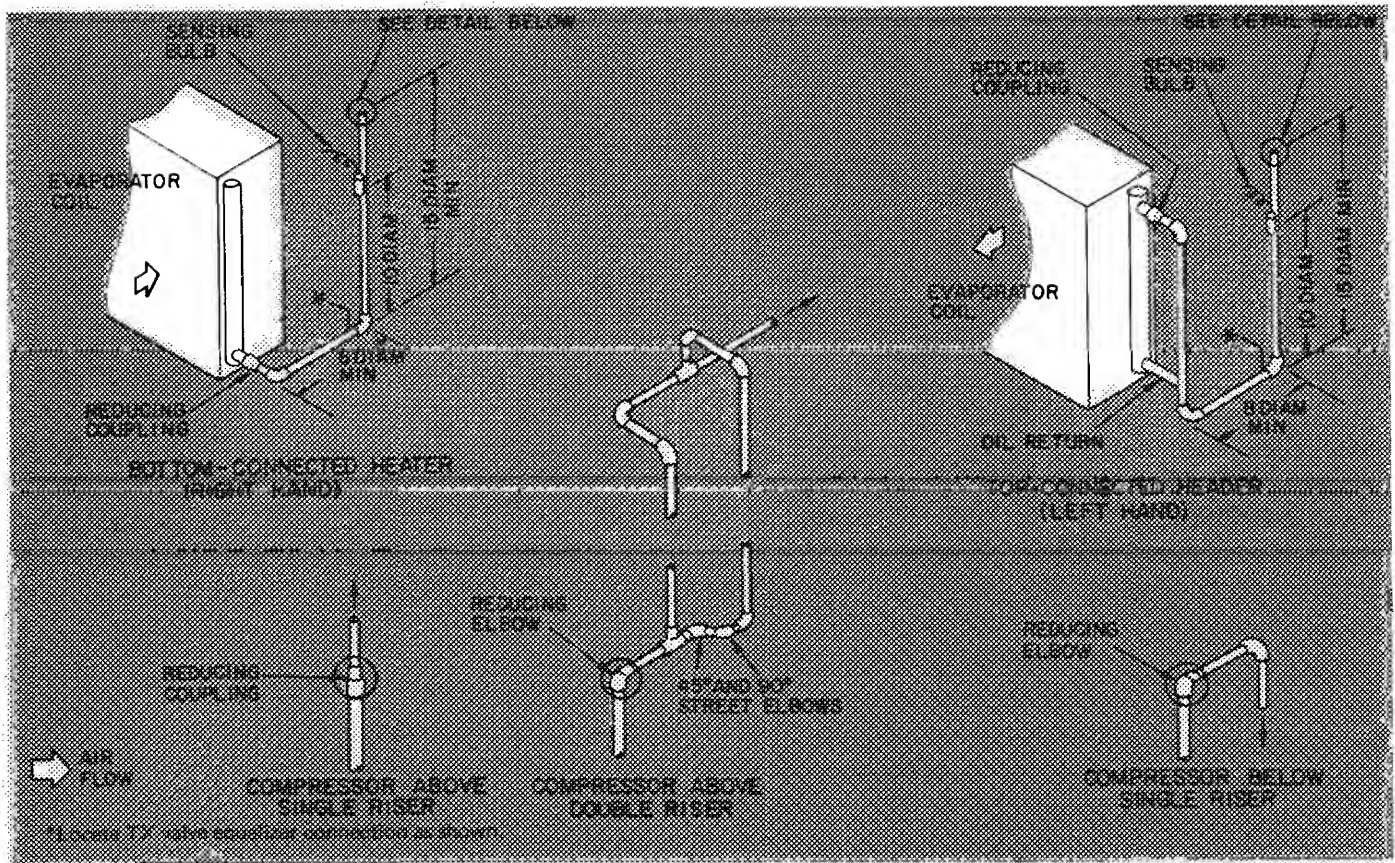


Fig. 14 – Suction Line Piping – Single Unsplit Coil

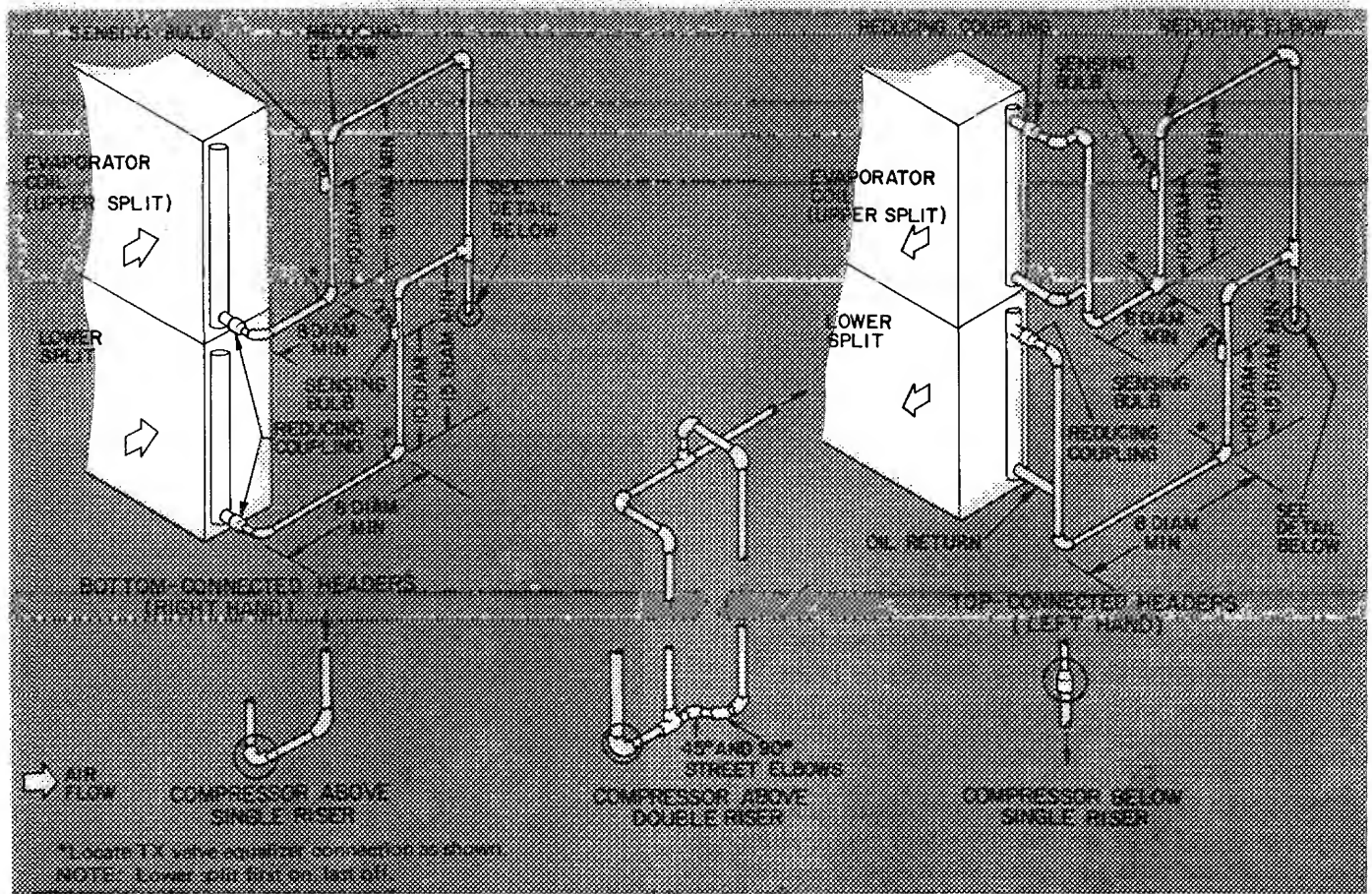


Fig. 15 – Suction Line Piping – Face Split Coil

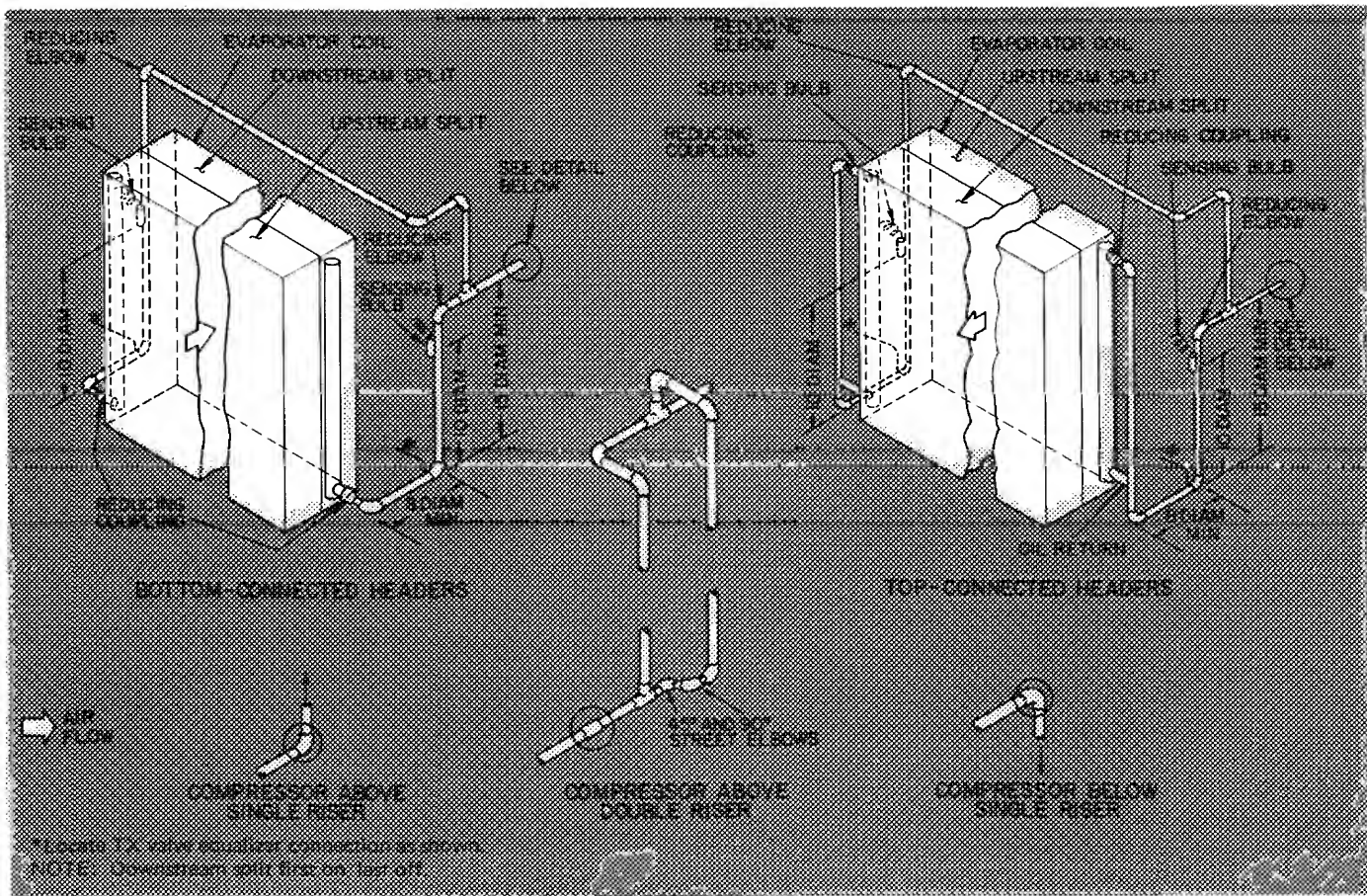


Fig. 16 – Suction Line Piping – Row-Split Coil

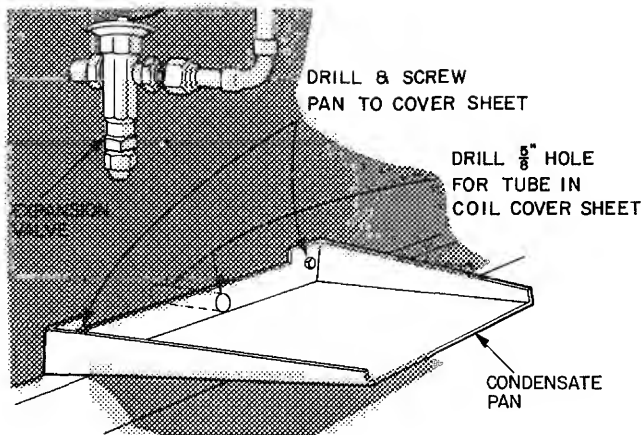


Fig. 17 – Expansion Valve Condensate Pan

CHILLED WATER, HOT WATER AND STEAM COILS

1. Use unions or flanged coil connections for ease of service per Fig. 18.
2. Install a tee with a pipe plug at coil connection to facilitate air blow thru coil for freeze protection per Fig. 18.

CONDENSATE DRAIN – Connect drain line and trap per Fig. 19 to condensate drain connection. Do not reduce pipe size. Run drain line to nearest open site drain. On unit sizes 070 thru 140, install a field-supplied cap on unused drain connection.

HUMIDIFIERS – Humidifier water and steam supply must be odor-free and uncontaminated. Consideration shall be taken by installer as to corrosive and odor effect from hard or contaminated water. Carrier assumes no responsibility for problems caused by inadequate water treatment.

General – It is recommended that a strainer be installed in supply line. Steam grid humidifiers require a drain line trap with a water seal to offset unit negative static pressure. Trap is similar to that shown in Fig. 19.

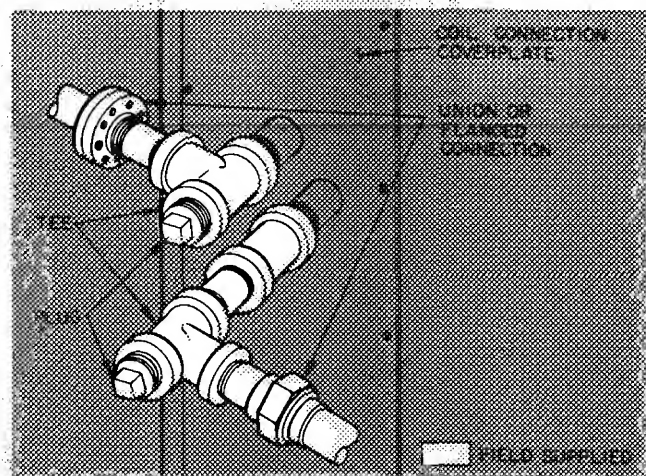


Fig. 18 – Coil Connections

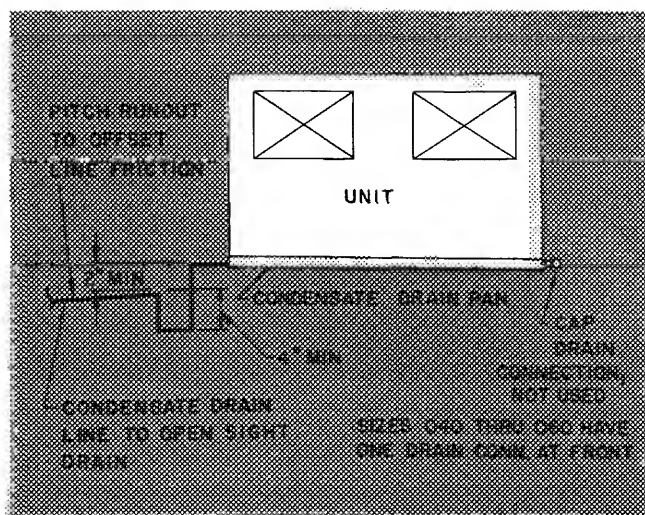


Fig. 19 – Cooling Coil Condensate Piping

Coil Removal and Reversing

1. Remove coil coverplate.
2. Remove air baffle from both ends of coil on leaving air side.
3. Remove coil hold-down bolts from both ends of coil.
4. Slide coil out of unit. *Lift coils from suspension points at four corners as close to tube sheets as possible. Never lift from center. Handle cooling coils with coil face vertical.*
5. Reverse coil per Fig. 20.
6. Reverse steps 1 thru 4 to reinstall. *Cooling and hot water heating coils must be reinstalled so refrigerant or chilled water supply enters on air-leaving face of coil and returns on air-entering face. Steam heating coils must be installed with upper connection for supply and lower for return. Supply connection has a raised letter "S" on return-bend type steam coils. Supply connection is larger than return on nonfreeze type steam coils.*

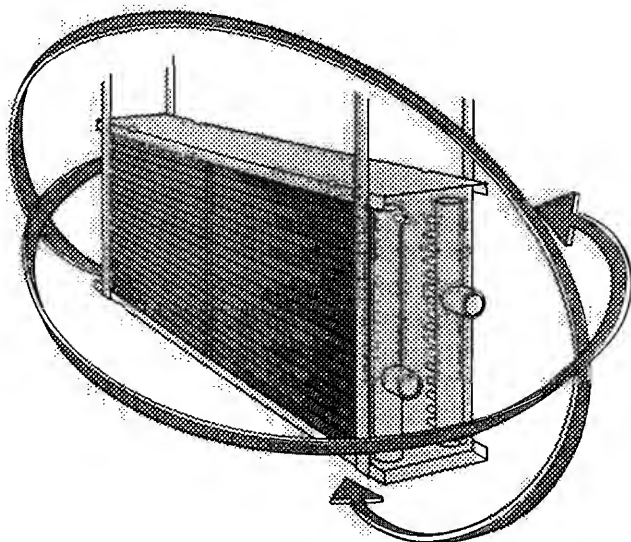


Fig. 20 – Coil Reversing

Duct Connections — Make connections per accepted design practices. Refer to Carrier System Design Manual for details.

Motor and Drive

GENERAL

1. *Excessive tipping will cause oil loss in sleeve bearing motors. Follow motor manufacturer's recommendations.*
2. Check job prints to determine correct motor mounting position.
3. Drive package numbers are marked on drive package and label on drive end of fan section.
4. Required center-to-center distance (C/D) between fan and motor shafts is marked on fan drive package.
5. Refer to Table 7 for motor base used on unit sizes 070 thru 140. A single bracket is used universally for unit sizes 040 thru 060. *Motors larger than 50 hp must not be mounted on unit. Use field-provided, floor-mounted base under unit and motor.*

**Table 7 – Motor Base Usage
(Unit Sizes 070 thru 140)**

MTR BASE PART NO.	HP RANGE*	NEMA FRAME SIZE RANGE	MOTOR BASE CRADLE DIM. (in.)
39BA070-453	1/2 - 20	56-256T or 56-286U	16 1/8 x 20 1/4
39BA110-453	25-50	284T-326T or 324U-356U	23 1/4 x 26 1/2

*Corresponds to frame sizes for open dripproof 1750 rpm motors only.

UNIT SIZES 040 THRU 060 – Refer to Fig. 21.

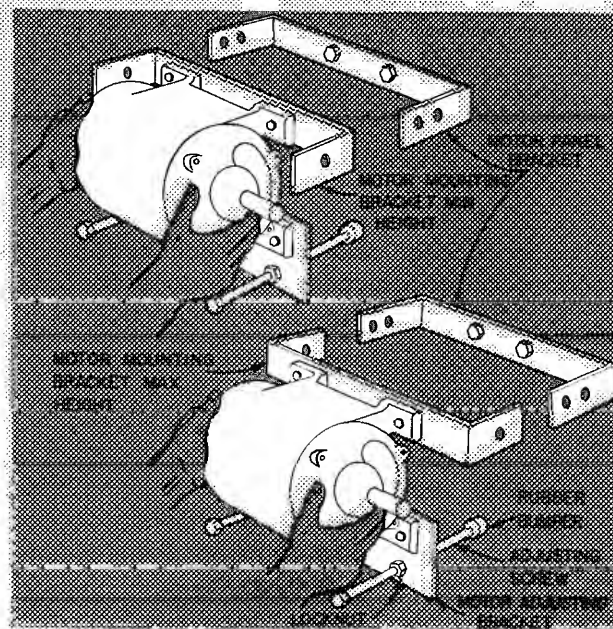


Fig. 21 – Motor Base (Unit Sizes 040 Thru 060)

1. Set motor mounting bracket position (min or max) to provide required drive center-to-center distance.
2. Install motor on motor mounting and adjusting brackets with hardware from accessory drive package.
3. Install adjusting screw, locknuts, and rubber bumpers (shipped in cloth bag, taped to motor base) on motor adjusting bracket. *Save three 1/4-20 x 1/2-in. self-tapping screws for belt guard installation.*

4. Remove protective cover and clean grease from fan shaft with solvent.
5. Apply a light coat of grease or white lead to fan shaft.
6. Install fan and motor sheaves with correct angular and parallel alignment per Fig. 22. Refer to drive package carton for additional instructions.

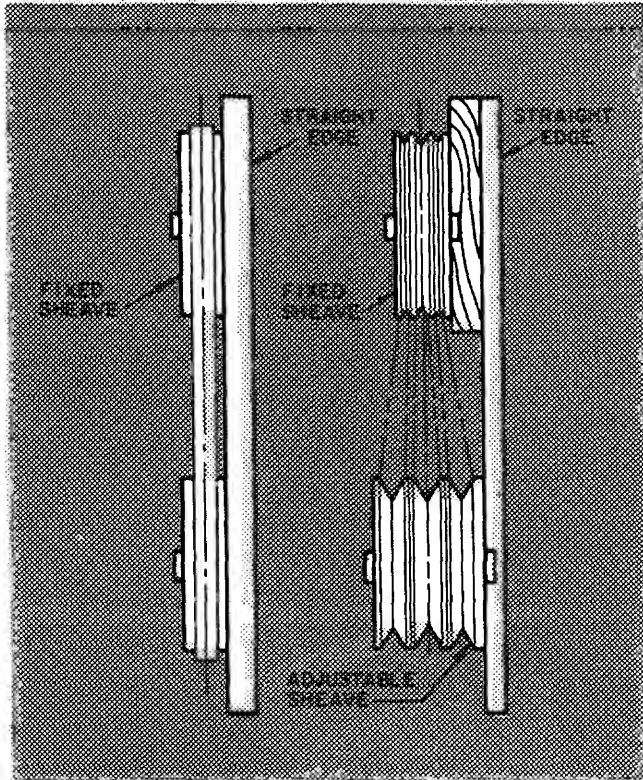


Fig. 22 – Correct Sheave Alignment

7. Loosen locknut and adjust belt tension by turning adjusting screws. Refer to Table 8 for correct belt tension and note following:
 - a. Correct belt tension is lowest tension at which belts will not slip during operation.
 - b. Correct belt tension may cause belts to slip and squeal briefly on start-up, which is normal and will disappear after unit has reached operating speed. Excessive belt tension will reduce belt life and may cause bearing and shaft damage.
 - c. To determine correct belt tension, use the following formula for deflection forces shown in Table 8.

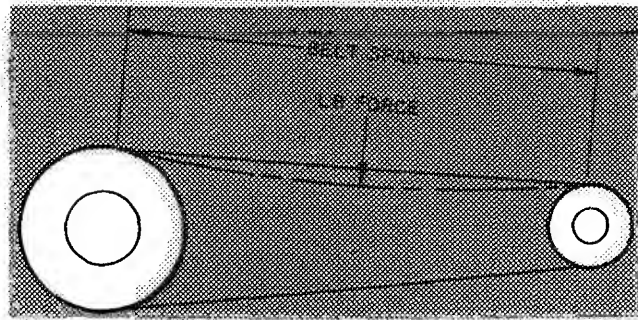
$$\text{Deflection} = \frac{\text{Belt Span}}{64}$$

For a belt span of 16 in., small sheave of 5-in. pitch diameter (PD), size 4L belts:

(1) From formula $= \frac{16}{24} = 1/4$ -in. deflection needed.

(2) From Table 8, deflection force is between 1-7/8 and 2-5/8 lb.

Table 8 – Fan Belt Deflection Force (lb)



BELT CROSS SECTION	SMALL PD RANGE	DEFLECTION FORCE – LBS							
		Std Belts		Super Belts		Notch Belts		Steel Cable Belts	
		Min	Max	Min	Max	Min	Max	Min	Max
A	3.0 - 3.6	2	2½	2½	3¼	3	3¾	3¼	4
	3.8 - 4.8	2¼	3	3	4	3¾	4½	3¾	4¾
	5.0 - 7.0	2½	3¾	3¾	5	3¾	5½	4¾	5½
B	3.4 - 4.2	2¼	3	3	4	3¾	4½	4½	5½
	4.4 - 5.6	3	4½	4	5½	4½	6¼	5½	7¼
	5.8 - 8.6	4	6	5¼	7½	6	9	7	8¾
C	7.0 - 9.4	6½	9	8½	11¾	9¾	13½	11¾	14
	9.6 - 16.0	8½	12¼	11	16	12¾	18½	14¾	17¾
4L	2.1 - 2.8	1½	1¾	—	—	—	—	—	—
	3.0 - 3.5	1½	2½	—	—	—	—	—	—
	3.7 - 5.0	1¾	2½	—	—	—	—	—	—

PD — Pitch Diameter

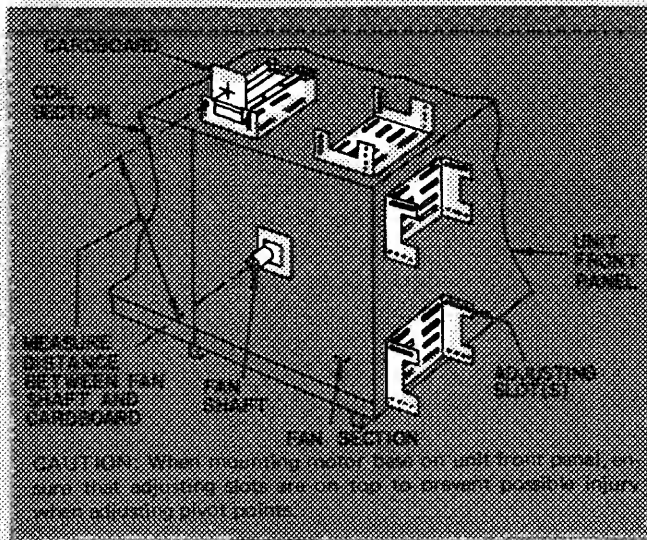
- (3) If necessary, increase or decrease the tension on belts until the deflection force is between 1 7/8 and 2 5/8 lb.

8. Secure locknut and check all bolts on motor base for secureness.

UNIT SIZES 070 THRU 140 —

1. Adjust motor base prior to mounting motor as follows:
 - a. Make cardboard pattern showing distance from base of motor to shaft center per Fig. 23.
 - b. Determine specified motor position and bolt motor base to fan section with hardware from accessory drive package per Fig. 24. Do not tighten until sheaves are aligned.
 - (1) Locate base adjusting slots in respect to fan shaft as shown.
 - (2) Place cardboard pattern on motor base.
 - (3) Check center-to-center distance between pattern and fan shaft with center-to-center distance marked on drive package carton. Required center-to-center distance should be obtained with support angle bolts approximately centered in adjusting slots. This will permit final adjustment for belt installation and proper tension.
 - (4) If center-to-center distance is too short, adjust pivot point upward; if too long, adjust pivot point downward. Refer to Fig. 25.

Fig. 23 — Cardboard Pattern



**Fig. 24 — Location of Adjusting Slots
(Unit Sizes 070 thru 140)**

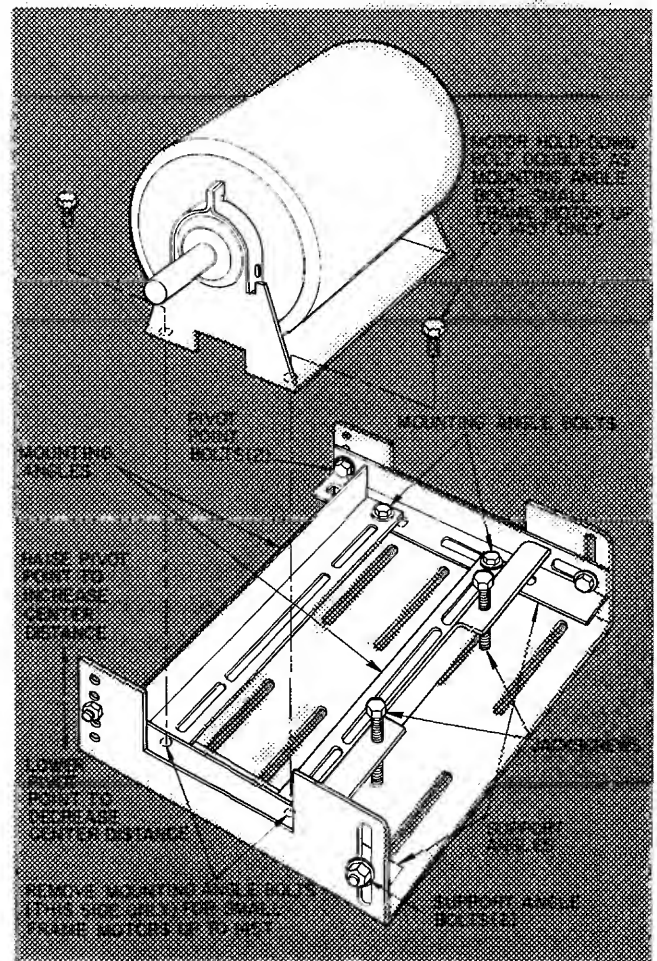
2. Place motor on motor base with maximum shaft overhang and install hardware from accessory drive package; tighten securely. Position small frame motors up to 145 T per Fig. 25. Note that hold-down bolts for small frame motors will be smaller in diameter than mounting angle bolts supplied in motor base, Fig. 25.
3. Locate mounting angles so motor shaft will line up with center of cutout in motor base. Make certain mounting angles are perpendicular to support angles and secure mounting angle and motor hold-down bolts shown in Fig. 25.
4. Remove protective cover and clean grease from fan shaft with solvent.
5. Apply a light coat of grease or white lead to fan shaft.
6. Install fan and motor sheaves with correct angular and parallel alignment per Fig. 22.
7. Correct alignment by repositioning motor base.
8. Secure motor base hold-down bolts.
9. Loosen two support angle bolts per Fig. 24 and adjust belt tension by turning jackscrews. Follow step 7 of Motor and Drive (unit

sizes 040 thru 060). A pry bar may be used to support weight of motor.

10. Secure two support angle bolts and loosen jackscrews.
11. Adjust motor base after mounting motor as follows:

NOTE: If center-to-center distance was not properly set before mounting motor, adjust base height as follows for proper belt tension:

- a. Turn jackscrews until they contact motor base cradle.
- b. Block up motor under mounting angle nearest pivot points to support weight of motor. Place lever (pry bar or 2 x 4 for example) under same area.
- c. Loosen two support angle bolts, and adjust jackscrews until two support angle bolts are approximately centered in adjusting slots.
- d. Remove two pivot point bolts, raise or lower pivot point to obtain correct center-to-center distance. Replace pivot point bolts.
- e. Refer to preceding step 9 for final adjustment of belt tension.
- f. Secure two support angle bolts and two pivot point bolts, and loosen jackscrews.



**Fig. 25 — Small Frame Motor Mounting
(Such as 143T and 145T)**

Belt Guard

UNIT SIZES 040 THRU 120

1. Position belt guard and drill three engagement holes (sizes 040 thru 060) with a no. 5 drill or four engagement holes (sizes 070 thru 120) with a no. 3 drill in side of fan section using mounting bracket clearance holes as templates.
2. Secure guard to fan section with three 1/4-20 x 1/2-in. self-tapping screws.

UNIT SIZES 130 THRU 140

1. Position belt guard and drill eight engagement holes with a no. 3 drill in side of fan section, using mounting bracket clearance holes as templates.
2. Secure guard to fan section with eight 1/4-20 x 1/2-in. self-tapping screws.
3. Position two unattached mounting brackets over unit front or top structural member and secure to guard with four 1/4-20 x 1/2-in. self-tapping screws and guard engagement holes.
4. Drill four engagement holes in unit structural members with a no. 2 drill, using mounting bracket clearance holes as templates.
5. Secure two mounting brackets to unit structural members with four 1/4-20 x 1/2-in. self-tapping screws.

START-UP

Check List

1. Make certain all construction debris is removed from unit interior.
2. Check lubrication of fan and motor bearings.
 - a. Note that bearings are shipped completely full of grease for corrosion protection and may run warm temporarily on start-up until the excess grease has discharged. As a precaution, cycle unit on and off at one-minute intervals for five minutes.
 - b. Sleeve bearing motors are normally shipped with oil reservoir drained. Fill reservoir before starting motor.
3. Check secureness of bearing locking collars per Table 4. Refer to Fig. 26 for eccentric type.
4. Recheck sheave alignment and belt tension.
5. Make certain fan shaft turns freely and fan wheels do not rub in housings.
6. Make certain filters used during building construction are replaced with new ones. Refer to Table 9.
7. Check direction of rotation and fan speed. Arrow on fan drive side indicates correct direction of rotation. Excessive fan speed may result in condensate carry-over from cooling coil and/or fan motor overload. Refer to 39B, 39C Operation and Maintenance Instructions for operating limits.

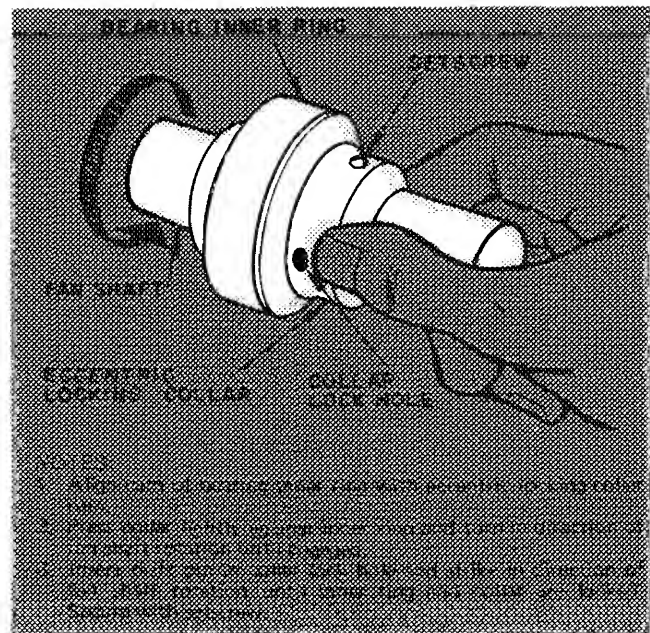


Fig. 26 — Securing the Bearing Eccentric Locking Collar

Table 9 — 39B Filters, 2 Inches Thick, (No. ... Size)

UNIT 39B	LOW VELOCITY AND MIXING BOX	HIGH VELOCITY
040	2...16x16	1...16x20
050	2...16x20	1...20x25
060	2...20x25	2...16x25
070	2...20x20 2...20x25 2...16x20	3...25x20
080	3...20x20 3...20x25 3...16x20	6...16x20
090	6...20x20 3...20x25 3...16x20	8...16x20
100	9...20x25 3...16x20	8...20x20
105 and 110	3...20x20 6...20x25 9...16x20	14...16x20
120	20...20x25 4...16x25	14...16x25
130 and 140	36...20x20 36...20x25	24...20x20 24...20x25

8. Vibration Check:

NOTE: After final assembly, unit is checked to ensure vibration level is within tolerance.

If excessive vibration is noted, check following:

- a. Drive alignment
- b. Mismatched belts
- c. Wheel or sheaves loose on shaft
- d. Loose or worn bearings
- e. Loose mounting bolts
- f. Motor out of balance
- g. Sheaves eccentric or out of balance
- h. Vibration isolators improperly adjusted
- i. Worn or corroded wheel (replace if bad)
- j. Accumulation of material on wheel (material accumulation should be scraped off).

SERVICE

Coil Removal

1. Disconnect piping.
2. Remove coil cover panel.
3. Remove air baffle from both ends of coil on leaving air side.
4. Remove and discard coil shipping hold-down bolts from both ends of coil.
5. Slide coil out of unit. *Handle cooling coils with coil face vertical. Handle heating coils with coil face vertical or horizontal. Lift coils from four suspension points at corners as close to tube sheets as possible per Fig. 27.*
6. Replace in reverse order.

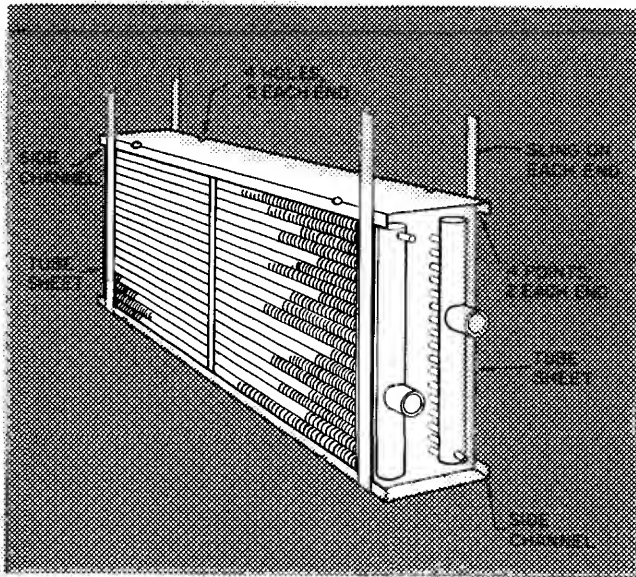


Fig. 27 — Handling Coil with Face Vertical

Fan Section Access — All fan section sides, front and top panels may be removed. The panels to be removed for fan access will depend on unit location and the amount of access required. Refer to Fig. 28.

After removing panels, store them properly to avoid damage to insulation. Before entering fan section, protect insulation by placing cardboard or boards on bottom of fan section to serve as a walkway.

Fan Shaft Bearing Replacement

1. Remove belt guard, belts, and sheave.
2. Loosen bearing locking collar setscrews.
3. Remove bearing hold-down bolts.
4. Remove bearing and observe the following precautions:
 - a. Make certain fan shaft surface is clean between bearing and end of shaft.
 - b. Block up fan shaft. *Do not let fan shaft drop on bearing support, or let fan wheel twist or bind between sides of fan housing.*

5. Install new bearing and tighten bearing locking collar setscrews per Table 1 and Fig. 26.
6. Make certain fan wheel does not rub sides of fan housing after installing new bearings.
7. Recoat fan shaft with a rust inhibitor.
8. Replace sheave, belts, and belt guard.

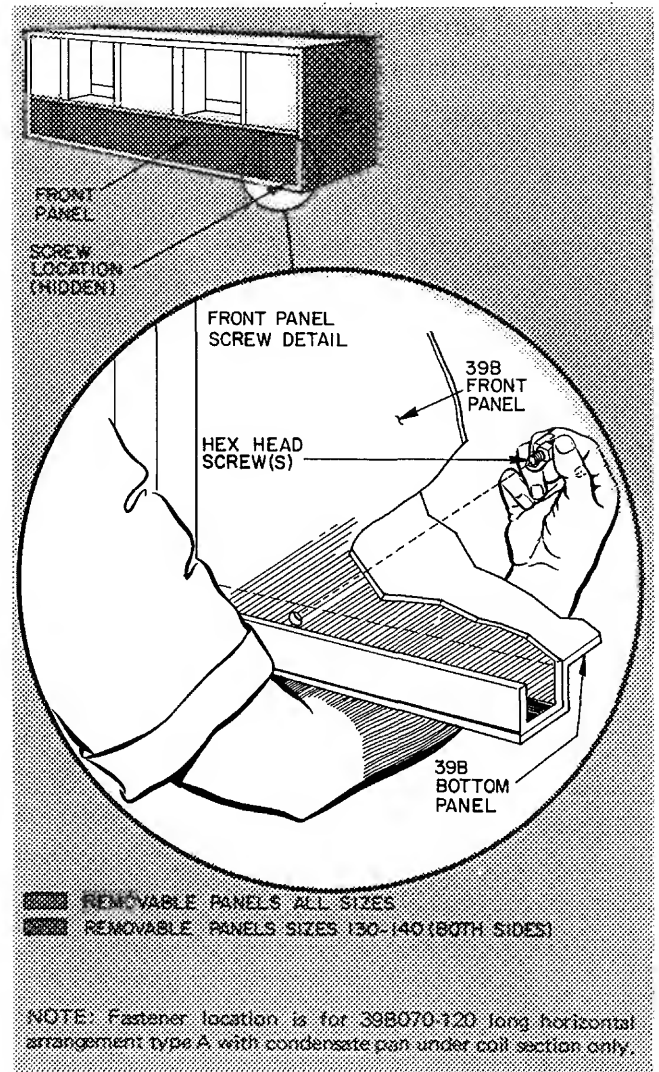


Fig. 28 — Removable Panels for Access to Fan Section

Fan Shaft Removal

1. Remove fan shaft bearings per Fan Bearing Replacement.
2. Refer to Fan Section Access and remove panels.
3. Loosen fan wheel setscrews (sizes 040 thru 060) or fan wheel clamps (sizes 070 thru 140).
4. Block up fan wheels within housings to prevent dropping when shaft is removed.
5. Remove bearing plates and slide shaft from unit.
6. Replace shaft in reverse order and replace any damaged internal insulation. Refer to Fig. 2 or Table 4.

Fan Wheel Removal

1. Remove fan shaft bearings per Fan Bearing Replacement.
2. Remove fan shaft per Fan Shaft Removal.
3. Remove fan discharge ductwork.
4. Remove cutoff plate per Fig. 29 and remove fan wheel thru housing discharge.
5. Replace any damaged internal insulation.

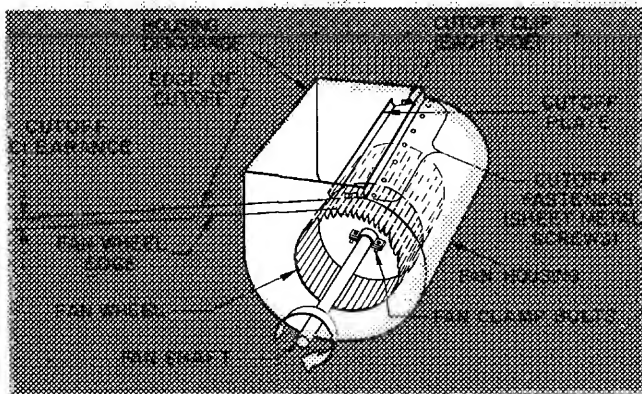


Fig. 29 — Fan Details

6. Replace fan wheel in reverse order and note following:
 - a. When replacing fan wheels on unit sizes 070 thru 140, ensure balancing reference marks on wheel (normally a red line) and clamps line up. Adjust fan clamp torque per Fig. 2.
 - b. Adjust cutout clearance per Table 10. For minor adjustment, loosen screw holding cutoff clip to fan housing and adjust cutoff plate. For further adjustment, loosen bearings and shift fan shaft.

Table 10 — 39B Cutoff Clearance (in.)

UNIT 39B	FAN SECTION		
	A	B	C
040 thru 060	1 1/4	—	—
070 thru 080	3/4	3/4	—
090	1 3/16	1 3/16	—
100 thru 110	1 13/32	1 3/16	—
120	2 1/2	2	—
130	2 3/4	2 1/2	—
135 thru 140	3	2 1/2	3

For replacement items use Carrier Specified Parts.

Manufacturer reserves the right to change any product specifications without notice.

CARRIER AIR CONDITIONING COMPANY • SYRACUSE, NEW YORK